I—A REVIEW OF THE AMERICAN SPECIES OF RUTELINÆ, DYNASTINÆ AND CETONIINÆ.

The primary divisions of the Scarabæidæ are not rigorously definable and, in fact, after so long a period of geologic evolution, it would be illogical to imagine any other condition than an interblending of structural characters to such a degree as to render delimitation of extended groups, in other than a general way, more or less unsatisfactory. There is scarcely a structural feature defining one group that may not appear in some other group. This is in a measure true also of the more restricted subdivisions, such as genera, except when monotypic. The discussion of these points is made by Lacordaire so fully and so well, that it is not necessary to go into the subject at the present time and in a work designed more especially to differentiate and define the species of a restricted fauna.

Subfamily RUTELINÆ.

The essential structural peculiarities of this large and important group of genera may be said to be the unequal tarsal claws, the corneous ligula, which is rigidly fused with the mentum to form a single large plate, the free labrum, the 9- or 10-jointed antennæ, invariably having a 3-jointed club, which is small or moderate in length and, finally, the fact that the last three pairs of abdominal spiracles rapidly diverge posteriorly, the last spiracle on (*Plusiotis*) or just above (*Anomalæ*) the suture between the last abdominal plate and the propygidium.

In the present paper I am disinclined to advance any changes in the scheme of classification proposed by Lacordaire, except to suggest that the singular membranous elytral margins might be made a primary character, as the Geniatids appear to be more closely allied to the Anomalids than they are to the true Rutelids, and again because such an arrangement would shift the Dynastid-like *Parareoda*, *Byrsopolis* and *Polymœchus* to the end of the series, instead of separating these genera from the Dynastinæ by

the Geniatids. The tribes, so far as they concern the North American fauna, are arranged by Lacordaire as follows:

Labrum oblique, thin, not prolonged but generally sinuate medially..2
Labrum large, vertical, more or less prolonged medially, generally abutting against the ligula.....3
2—Elytra with a membranous border; antennæ always 9-jointed. ANOMALINI
Elytra without a membranous border; anterior coxæ transverse and deep-set.....RUTELINI
3—Tarsi simple.....*ANOPLOGNATHINI
Tarsi dilated at least in the males.....*GENIATINI

Only the first two of these tribes occur north of the Mexican boundary. The Geniatini are almost confined to South America, though a few occur in Central America; the body is more elongate and with much greater cephalic development than in the Anomalini and the larger claw of all three pairs of tarsi is cleft in a very large proportion of the species.

Tribe ANOMALINI.

This important section of the Rutelinæ is composed of very numerous species, assignable to many genera and widely distributed over the greater part of the earth in both high and low latitudes. The genus *Anomala*, as enlarged by Burmeister and Lacordaire, contains many discordant elements and has more the nature of a supergenus or subtribe than a true genus, the latter being properly a group of species rigidly limited by special and restricted structural characters, assuming, at any rate, the absence of real intergrades, which seems to be the condition characterizing most of the subordinated groups. Habitus is an important character in estimating the limits of such groups of species. Furthermore in the present case it is necessary either to recognize a number of distinct genera, of which *Euchlora* is one of the more conspicuous, or to give the latter name to the entire group, for it antedates *Anomala* in point of time and therefore, in justice, ought not to have been made to give way to the latter. I much prefer the former course.

The greater part of the Anomalini are small or moderate non-metallic forms, with rather thin integuments, but there are some large and densely chitinized species of brilliant coloration, such as the Chinese *Euchlora viridis* Fabr., which rival the conspicuous typical

Rutelids of Central America. The tarsal claws are greatly diversified, but both claws of the posterior tarsi are invariably simple, the larger never cleft as it generally is in the South American tribe Geniatini, which could very well immediately follow the Anomalini in the series as before stated, because of the membranous elytral margins, and not be separated therefrom by the tribe Rutelini.

In the following generic analysis of the tribe Anomalini, only such North and South American genera are included as are actually represented by material in my collection:

Mesosternal epimera not ascending before the elytral humeri 2
Mesosternal epimera narrowly and inconspicuously ascending in front of the humeri; larger claw of the first and second tarsi always cleft, more unequally in the male as usual; ligula broad.....6
2—Ligula small and narrow, entire at tip; tarsal claws all entire, never cleft.....3
Ligula large and broad, generally more or less sinuate at tip.....4
3—Clypeus long, rounded; anterior thoracic angles rounded; body moderately large in size, pale, glabrous. Sonoran regions. [Type *Anomala cavifrons* Lec.].....**Rhombonalia**
Clypeus short, deeply concave, broadening to the base; anterior thoracic angles acute; body very small in size, with thin pale integuments. Florida. [Type *Anomala semilivida* Lec.].....**Anomalepta**
4—Labrum sharply inflexed, the exposed edge thin; clypeus rather long, the upturned apex feebly sinuate medially; ligula very large and transverse, broadly and angularly emarginate at apex; body cuneiform, with thin pale integuments; larger claw of the first and second tarsi not properly cleft but with an inclined acute tooth beneath near the apex. Sonoran regions. [Type *A. cuneata* n. sp.] **Anomalacra**
Labrum not sharply inflexed, the exposed edge obtuse, integuments, claws and habitus greatly diversified.....5
5—Mesosternum between the coxæ flat or but feebly convex, the meso-metasternal suture always evident. Cosmopolitan. [Type *Scarabæus æneus* DeG.].....**Anomala**
Mesosternum tumid and smooth between the coxæ, more or less anteriorly prominent and sometimes greatly produced, gradually acuminate and anteriorly porrect; meso-metasternal suture obliterated; body with rather thicker and more metallic integuments than the American species of *Anomala*. North and South America. [Type *Melolontha marginata* Fabr.].....**Spilota**
6—Clypeus normal, broadly trapeziform, rounded or anteriorly dilated.7
Clypeus narrowed and reflexed anteriorly, rhiniform.....11
7—Hind tibiæ constricted apically or surate as in *Anomala;* body oval, convex, pubescent throughout; clypeus broadly rounded, not narrowed basally; mesosternum broadened and feebly convex between the coxæ but not tuberculiform. Mexico. [Type *Anomala villosella* Blanch.].....***Lamoana**

Hind tibiæ not constricted apically.....8
8—Humeral callus of the elytra strongly defined and well exposed by the narrower prothorax, the hind body generally rather tapering from the base; clypeus flat, transversely trapezoidal; mesosternum tuberculate between the coxæ; hind tibiæ rather long, only feebly broadening from the base. North and South America.....9
Humeral callus more diffuse and less exposed basally, the hind body shorter and quadrate; mesosternum narrow and not tumid between the coxæ.....10
9—Elytra with numerous deep subequal sulciform striæ; body moderate in size. [Type *S. sulcipennis* Burm.].....**Strigoderma**
Elytra with few feebler, less defined and less regular striæ; body very small in size. [Type *Melolontha pygmæa* Fabr.]...**Strigodermella**
10—Hind tibiæ very short and stout, strongly obconic in form; clypeus as in the preceding, flat and trapezoidal; prothorax distinctly narrower than the elytra, the latter rather feebly and somewhat irregularly striate. Texas and adjoining parts of Mexico. [Type *A. parviceps* n. sp.].....**Alamona**
Hind tibiæ of normal length, subparallel, sometimes much stouter in the male than in the female; clypeus short, more or less concave, roundly dilated at the sides; prothorax large, not notably narrower than the elytra, the latter strongly and somewhat unevenly punctato-striate as in many sections of *Anomala*. Mexico and Central America. [Type *Anomala* (*Phyllopertha*) *mexicana* Burm.]....***Epectinaspis**
11—Body elongate-oval as in *Lamoana*, shining, partially metallic, glabrous above, coarsely pubescent beneath, the prothorax large, convex, the elytra short, quadrate, with scarcely impressed rows of rather coarse punctures; mesosternum tumid between the coxæ; hind tibiæ elongate, flattened and subparallel. Mexico. [Type *C. metallescens* Blanch.].....***Callirhinus**

Anomala villosella Bl. is a difficult species to deal with taxonomically. It was assigned to *Anomala* by Bates, although the ascending mesosternal epimeron was recognized and in reality it is here as marked a feature as in *Strigoderma;* this structure is not by any means so evident in the species associated with *villosella* by Mr. Bates. I think, viewing the subject from all sides, that *villosella* should therefore form the type of a separate genus as defined above. *Phyllopertha* Steph. is omitted from present consideration; the type is palæarctic and no American allied forms are at hand; probably no American species belongs to the genus, strictly speaking,—not even excepting the Mexican *Phyllopertha tolucana* of Bates.

The grouping of the Mexican *Anomala* species adopted by Bates might lead one to suppose that group 2 was in fact intermediate between *Spilota* and the normal type of *Anomala*, but I do not find this to be the case. The mesosternum in *cincta* is truly broader

between the coxæ than in the *inconstans* type and with the surface somewhat more convex, but it does not have a trace of the peculiar tumidity and amalgamation with the metasternum seen in *Spilota*, and *cupricollis*, included under group 2 by Mr. Bates, is truly a *Spilota* and in no way allied to *cincta* in the structure of the mesosternum. With a moderate series of the Mexican species at hand, I can therefore find no evidence that *Spilota* is not a valid genus.

The following work relates primarily to the species of America and Canada, but the opportunity is taken to make known a few Mexican and Central American species, believed to be new; these, as usual, will be indicated by the prefixed asterisk.

Rhombonalia n. gen.

The small narrow ligula, with narrowly arcuato-truncate apex and small, transverse, scarcely at all impressed labrum, in connection with the very obtusely rounded anterior thoracic angles, narrowly subparallel form of the body, generally feebly sculptured elytra and simple tarsal claws, indicate a true genus, not very closely allied to *Anomala*, that is, at any rate, to the American species of *Anomala*, which, as a group, Ohaus shows are rather radically different from the European in the structure of the male sexual characters and they also differ in habitus to some extent. The clypeus also differs markedly from that of *Anomala*, being much narrower and more elongate, with the apex gradually much reflexed, the surface sloping downward from the plane of the front, from which it is separated by a tumid transverse suture in all the normal species. *Anomala camancha* Wick., having an impressed clypeal suture and transverse clypeal apex, with stronger elytral sculpture, is doubtfully a member of the genus, though having simple tarsal claws; the author does not describe the mouth-parts or the form of the thoracic angles. It is said by Schaeffer that the Mexican *carinifrons* of Bates, which is truly a member of the genus, occurs in Arizona; I have not seen it but transcribe the original description below. The species are as follows:

Clypeal suture feebly cariniform, the plane of the clypeus slightly declining 2
Clypeal suture impressed, straight, not at all cariniform 6
2—Sides of the prothorax parallel or converging toward base, the basal angles very obtuse 3

Sides slightly diverging posteriorly, the hind angles somewhat everted. 5

3—Integuments alutaceous in lustre. Color pale yellowish-brown throughout the body, legs and antennæ, moderately stout, subcylindric; head fully half as wide as the prothorax, the eyes large and prominent, separated by scarcely twice their width; front densely but rather finely punctato-scabrous; clypeus but little wider than long, rounded, the sides straight and parallel, the surface concave, shining, finely, rather sparsely punctate; antennal club long, exceeding all the other joints combined; prothorax but little narrower than the elytra, four-fifths wider than long, the sides parallel and nearly straight basally viewed vertically, converging viewed obliquely, rounded anteriorly, the apex scarcely at all sinuate, the base broadly lobed medially, with strong entire bead; surface everywhere rather finely, feebly, sparsely punctate; scutellum sparsely punctulate; elytra a fifth longer than wide, parallel, rapidly obtuse at tip, the striæ deeply impressed, finely, obsoletely punctate, more strongly laterad, the intervals convex, minutely, remotely punctulate, the second flatter, with a very irregular line of distinct punctures, obsolete posteriorly; pygidium finely, obsoletely and remotely punctulate; hind tibiæ stout, feebly surate, as long as the femora, a little shorter than the tarsi; middle coxæ only very narrowly separated as usual in the genus. Length (♂) 10.5–11.5 mm.; width 5.5–6.0 mm. Texas. [*Anomala cavifrons* Lec.].....**cavifrons** Lec.

Integuments shining.....4

4—Body nearly as in the preceding but smaller, narrower and less convex, still paler brownish-flavate throughout; eyes, clypeus and antennæ nearly similar, except that the clypeus is flat, the apex less broadly reflexed; prothorax three-fourths wider than long, the sides more rounded, evidently converging basally viewed from above, the basal lobe stronger, the margin similarly beaded, the apex truncate; surface similarly convex, finely and sparsely punctate; scutellum narrower; elytra a fourth longer than wide, similar in general form and sculpture; pygidium less sparsely punctulate; hind tibiæ distinctly more slender, much shorter than the tarsi, which are less stout than in *cavifrons;* coarse sparse hairs of the sterna similar; anterior tibiæ with a single external tooth as usual, the tarsi slender. Length (♂) 9.3–9.7 mm.; width 4.6–4.7 mm. Kansas (Trego and Rooks Cos.).....**comes** n. sp.

Body somewhat as in *cavifrons* but a little larger and with notably more elongate elytra; surface very convex, strongly shining, pale and very uniform luteo-flavate throughout, the legs concolorous; head nearly as in *cavifrons* but rather more coarsely punctato-rugose, the clypeus similarly declivous from the acutely prominent suture but more transverse, being about one-half wider than long, the strongly concave and reflexed margins almost sculptureless; eyes smaller, being separated by two and one-half times their width; antennal club similarly long; prothorax smaller, distinctly less than twice as wide as long, rather more narrowed anteriorly, otherwise similar, except that the surface is strongly shining and with the sparse punctures

larger, deeper and much more distinct, becoming smaller and closer about the brownish lateral spot; scutellum much smaller than in *cavifrons;* elytra nearly a third longer than wide, otherwise as in *cavifrons* but very shining, the broadly and moderately impressed striæ still more obsoletely and very vaguely punctate; pygidium sparsely, feebly and very indefinitely sculptured, convex and shining; hind femora more slender. Length (♂) 11.2 mm.; width 6.0 mm. Arizona (San Bernardino Ranch, Cochise Co.).—Smyth. Communicated by Mr. Knaus.....**cochiseana** n. sp.

Body relatively much shorter and broader than in any of the preceding, pale testaceo-flavate throughout, shining; head and concave clypeus nearly as in *cavifrons*, the sculpture a little stronger; eyes not quite so large or prominent; antennal club in the type evidently longer than the entire stem; prothorax much shorter and more transverse, fully twice as wide as long, the sides rounded, distinctly converging basally viewed from above, the basal angles very obtuse and rounded; basal bead strong and entire, the lobe moderate, the apex subtruncate; surface convex, finely, sparsely punctate, a little more closely and strongly laterad; scutellum finely, feebly and remotely punctulate; elytra evidently wider than the prothorax, barely visibly longer than wide, the nine or ten striæ deeply impressed, the punctures obsolete except toward the sides, where they are moderately developed, as also in the confused line along the middle of the flatter second interval; intervals impunctate; pygidium finely, very feebly and remotely punctulate, the punctures minutely and transversely sublineiform; legs and under surface nearly as in *cavifrons*. Length (♂) 10.0 mm.; width 5.7 mm. Texas.
transversa n. sp.

Body oblong-ovate, wholly flavo-testaceous, shining; head very densely punctato-scabrous, the vertex smoother; clypeus deflexed, rather narrowly subquadrate, the anterior angles obtuse, the margin greatly reflexed, the frontal suture cariniform; prothorax short, widest a little before the middle, the sides broadly rounded, the basal margin entire; surface moderately densely and strongly punctate; elytra more strongly sculptured than in *cavifrons*, with ten punctured striæ, 1–7 of which are deeply, and the 3 lateral slightly, impressed; three costæ slightly convex; second interval rather wider, with the basal half confusedly, subbiseriately punctate; pygidium convex, shining, sparsely punctate; mesosternum rather narrow, declivous and flat; tarsal claws and antennæ nearly as in *cavifrons*. Length 13 mm. Mexico (Chihuahua City). [*Anomala carinifrons* Bates].....***carinifrons** Bates

5—Similar to *cavifrons* but distinguishable by the punctured elytral intervals and form of the prothorax, yellowish-testaceous, the coloration and lustre as in *camancha* but somewhat more shining; clypeus nearly as in *cavifrons*, the suture carinate; prothorax with the sides slightly diverging posteriorly, the hind angles somewhat everted; punctures rather fine and sparse; elytral striæ evidently punctured, the punctures of the intervals apparently distinct but less evident than in *camancha*, the second interval with an irregular

single series of punctures; pygidium finely and very sparsely punctate; tarsal claws as usual. Length 12.3 mm. Texas (El Paso). [*Anomala apacheana* Wick.]..... **apacheana** Wick.

6—Body unusually large in size, with the integuments subopaque, parallel in form, yellowish-testaceous, the head, tibiæ and tarsi darker; reflexed edge of the clypeus, thoracic bead, outer edge of the anterior tibiæ and posterior tibial ridges more or less blackish; head of the usual size, the front coarsely, densely but not deeply punctate, the vertex smoother; clypeus punctured like the front but less strongly, the front edge nearly straight, the angles broadly and evenly rounded, the sides subparallel, the margin rather strongly reflexed, the suture deeply impressed and nearly straight; antennal club about equal in length to the entire stem; prothorax punctured finely and rather sparsely, somewhat more closely toward the sides, with the usual sublateral foveiform irregularity, the basal bead entire, the lobe slightly sinuate medially; sides converging basally, the angles obtuse as usual; scutellum punctured like the pronotum; elytra a little more shining than the pronotum, rather strongly striate, the striæ punctured feebly, rather more strongly near the base and laterad, the intervals alternating in width and convexity, the broader and less convex intervals rather sharply, uniserially punctate, the second with a confused double series of punctures; lateral intervals not punctate; pygidial sculpture fine and rugulose; sterna hairy; mesosternum, legs, tibiæ and tarsal claws nearly as in *cavifrons*. Length 13.5–16.5 mm. New Mexico (Capitan Mt.). [*Anomala camancha* Wick.] **camancha** Wick.

The constancy of the feeble carination of the clypeal suture and uniform pallid coloration of the legs, as well as the entire body and head, in the typical members of this genus, renders the generic reference of *camancha* decidedly doubtful, particularly as the clypeus, the peculiar form of which is very significant in the present genus, seems to diverge quite obviously from the *cavifrons* type. The resemblance of the species to certain forms of *Cyclocephala* is noted by the author. All the specimens of this genus that I have seen are apparently of one sex, probably male; the female must be rather rare in collections. No allusion to the female is made by Mr. Bates in describing *carinifrons*. The inner or thicker claw of the anterior tarsi is feebly arcuate, gradually acutely pointed and, near the abruptly, deeply constricted base, is angularly subprominent beneath.

Anomalepta n. gen.

In this genus, which is evidently allied rather closely to the preceding, the body is very small in size and the integuments

peculiarly thin and pallid. The ligula has the same narrow form as in *Rhombonalia*, and the labrum is small but is more distinctly medially sinuate, the reflexed clypeus adjoining it above much more abbreviated and, though deeply concave, has a radically different form, being briefly trapezoidal. The middle coxæ are very narrowly separated, the anterior tibiæ bidentate, the corresponding tarsi slender, without the distinct tooth on the under surface of the claw joint seen in the preceding genus, but with nearly similar claws, except that they are relatively still smaller, the inner claw feebly arcuate, not very thick, constricted at base, the under edge behind the middle arcuately and feebly swollen; they are similar in the sexes and indeed the only sexual difference that I can observe, in any part of the body, is in the antennal club; this is shorter and more oval than in *Rhombonalia* and in the male is evidently longer than the six joints of the stem combined, while in the female it is a trifle shorter than the latter; the second joint is globular and thicker than the succeeding joints, which are slender; the hind tibiæ are slender, scarcely at all surate and much shorter than the tarsi. There are two distinctly defined species at hand, which may be described as follows:

Body oblong, parallel, moderately convex, shining, pale flavo-testaceous, the head black; clypeus more piceous, the pronotum with a large piceous area medially and biramose at base, the lateral irregular spot blackish; head rather small, though half as wide as the prothorax, the front finely punctato-rugulose medially, the clypeus deeply concave, very shining and sparsely punctulate, its entire external periphery strongly and subequally reflexed; eyes small, widely separated; antennæ pale; prothorax not quite twice as wide as long, the sides parallel, feebly arcuate, rounding anteriorly, the apex sinuate; base broadly lobed, with extremely fine but entire bead, the angles right and not rounded but not at all prominent; surface minutely and remotely punctate throughout; scutellum rather narrow, remotely punctulate; elytra about a third longer than wide, parallel, obtusely rounded in less than apical third, the striæ fine, very feebly impressed, finely and very obsoletely punctulate, the intervals flat, 3–5–7 slightly convex, 2–4–6 with scattered feeble punctures; pygidium convex, rather strongly but sparsely punctate; sterna picescent, finely, closely punctate and with rather abundant long pale hair; legs slender. Length (♂ ♀) 6.0–6.2 mm.; width 3.4 mm. Florida (Tampa),—Schwarz. [*Anomala semilivida* Lec.]. . . **semilivida** Lec.

Body shorter, more broadly oval, similar in coloration and lustre, except that the clypeus is almost entirely pale yellow and the thoracic piceous area attains the lateral parts of the base and basal angles;

head still smaller, much less than half as wide as the prothorax, the front more flattened and densely and more finely punctulato-rugulose; clypeus not so shining and with somewhat less strongly reflexed margins; eyes small, moderately convex; prothorax fully twice as wide as long, the sides more rounded, more strongly converging in almost apical half, the base rather more narrowly and strongly lobed, similarly beaded, the angles much more than right and blunter; surface similar, the small lateral fovea more distinct, deep; scutellum broader; elytra much shorter and of very different outline, not longer than wide, evenly rounded behind from the middle, the striæ finer and more sharply defined but still less punctate, the intervals all nearly flat, the punctures of the alternate ones almost completely obsolete, the second with a fine irregular line of punctulation along the middle, the punctures not broadly scattered as in *semilivida;* pygidium wider and not so convex, evidently though sparsely punctured; under surface and legs nearly similar, the metasternum rather shorter. Length (♂) 6.6 mm.; width 3.7 mm. Florida (the locality unrecorded).....**flaccida** n. sp.

Species of this genus may possibly occur in Cuba, but there is no evidence at hand.

Anomalacra n. gen.

This name is proposed for a very distinct modification of the *Anomala* type, occurring in northern Mexico. The body is anteriorly attenuated to a marked degree, being, at the posterior part of the elytra, nearly twice as wide as at the middle of the prothorax. The clypeus is broadly and moderately reflexed apically but scarcely at all at the sides, and at the middle of the apical margin there is a small feeble sinus. The ligula is large, fully twice as wide as long, with the apex broadly, angularly emarginate. The labrum is also peculiar, being very thin along the exposed edge, with a feeble slender transverse indentation at the middle, principally on the obliquely inflexed surface. The middle coxæ are narrowly separated, the mesosternum not modified. The anterior tarsi are very slender, with the basal joint much longer than the next two combined in the unique and apparently female type, the claw-joint feebly denticulate beneath and the claws long and slender, the thicker with the upper lobe of the apex so much longer than the lower that the latter, which is short, stout and obliquely pointed, is really a tooth situated at outer third of the lower edge of the claw; the tooth of the larger claw of the middle tarsi is very fine and still nearer the tip. The hind tibiæ are slender, feebly surate and closely,

finely punctate throughout their extent; the hind tarsi are slender, slightly longer than the tibiæ and the surfaces of the joints are also punctate. The type may be described as follows:

Body strongly cuneiform, convex, shining, testaceo-rufous, the elytra more flavate, with a broad common sutural vitta of pale piceous and not quite attaining the apex, glabrous above, the sterna and middle femora with abundant long coarse yellow hairs; head rather small, not quite half as wide as the prothorax, finely, closely punctate throughout as on the clypeus, the occiput smoother, the suture rather fine but impressed; clypeus transverse, large, three-fourths wider than long, the sides nearly straight, feebly converging from the base to the broadly rounded angles; eyes moderate, not very convex; antennæ of the usual structure, the club in the type distinctly shorter than the stem; prothorax not quite twice as wide as long, the sides parallel and nearly straight in basal, converging and almost straight in apical, half; the angle rounded; apex sinuate, the angles prominent; base broadly lobed, with fine entire bead, the angles slightly obtuse and rather broadly rounded; surface minutely but distinctly, evenly and rather closely punctate throughout; scutellum well developed, punctured like the pronotum; elytra fully two-fifths longer than wide, dilated posteriorly, broadly and obtusely rounded at apex, the striæ broadly and very feebly impressed, the intervals flat, two of them feebly convex, the surface between the two feeble convexities with three fine irregular series of very small feeble punctures, the punctures of the lateral series very fine but evident, of the others fine and rather uneven; second interval moderately wide and with confused scattered fine punctures; basal parts confusedly and finely punctured throughout, with all striæ effaced; pygidium convex, with moderately small and distinct though shallow close-set punctures. Length (♀) 11.0 mm.; width 5.8 mm. Mexico (Colonia Garcia, Sierra Madre Mts., Chihuahua),—Townsend ..... ***cuneata** n. sp.

I do not recognize any species mentioned by Bates that can be considered allied to this; the sinuation of the clypeal apex, although slight, is real and not accidental and is one of its conspicuous external features.

Anomala Samouelle.

This is an enormous and unwieldy cosmopolitan complex of species, which might be divided generically, even if on somewhat arbitrary lines, for the sake of convenience. The authorship of the name seems to be in some doubt and I have adopted the determination of Bates. The body is of very varied form, coloration, lustre and thickness of the integuments and the American species,

as a whole, differ markedly from the European in habitus, so that a separate subgeneric designation would seem to be appropriate, more especially as this divergence in facies is supplemented by a rather radical difference in male sexual characters as shown by Ohaus. I would suggest the following subgeneric grouping of the North American species:

Hind tibiæ never notably shorter than the femora, always obtusely and more or less feebly constricted near the apex,—that is, surate....2
Hind tibiæ notably shorter than the femora, dilated apically, obconical in form.....3
2—Hind tarsi as long as the tibiæ to somewhat longer; anterior tibiæ always dentate on the external edge; body small to moderate in size.....Group I
Hind tarsi very much longer than the tibiæ, the anterior tibiæ without trace of external tooth; body extremely small in size.....Group II
3—Anterior tibiæ dentate externally; labrum very short; ligula narrower than in the two preceding groups and entire at apex; antennal club (♂) notably long.....Group III

Taxonomically this grouping is rather unsatisfactory, by reason of the very unequal extent of the several sections, the second being known at present by only one species and the third by two or three. I have not given any systematic weight to the various developments of the larger claw of the anterior tarsi, first because the form of this claw is subject frequently to marked sexual modification and secondly because it is not accompanied by any evident difference in the general habitus, which is nearly always an indication of true generic or subgeneric validity. The upper surface of the body is always glabrous as in *Spilota* and the other normal Anomalids.

Group I.

Subgenus **Paranomala** nov.

This subgenus includes nearly all the American species at present listed under the name *Anomala*, excepting those assignable to *Spilota*. The body is oblong, frequently dilated posteriorly, often becoming very narrow and parallel as in *parvula*, and the integuments are more or less thin and almost invariably devoid of the metallic lustre which is so generally developed in *Spilota* and the European *Anomala*; this metallic lustre is sometimes visible, however, in comparatively slight degree, on the head and pronotum, as in *cincta* Say, but never, so far as observed, on the elytra. *Paranomala* may be divided into several sections as follows:

Pygidium less convex to nearly flat, subopaque, with dense wavy rugulosity; upper ramus of the large inner claw of the anterior tarsi (♂) very much finer and always shorter than the lower, or (♀), nearly equal to the lower ramus and often extending beyond it; body stout, oblong-suboval and convex, with moderately thick integuments; pronotum always uniformly black or piceous in color throughout. Section A

Pygidium notably convex, shining, with short and transversely arcuate scratches, which sometimes become deep or contracted and then more or less punctiform.....2

2—Larger of the anterior claws simple in both sexes, unusually small in size, never cleft; body of small size, the clypeus rather more deeply concave than usual. Atlantic regions.....Section B

Larger of the anterior claws cleft in both sexes as usual.....3

3—Pronotum with a single dark spot or larger area, which occasionally covers the entire disk, or with the entire pronotum invariably uniform in color; larger of the anterior tarsal claws more symmetrically split in both sexes than in section A, the cleft always smaller in the female.....Section C

Pronotum constantly pale, with two discal spots arranged transversely; body of more slender and subparallel form than in any of the other sections of the subgenus; male tarsal claws somewhat as in section A. Section D

These sections are of very unequal extent and C is somewhat heterogeneous in habitus.

Section A (*binotata*).

The species are rather numerous and are abundant in Mexico. As a rule, the sculpture of the elytra consists of more or less uneven lines of longitudinally geminated or irregularly spaced piceous or blackish punctures, which peculiarity appears in none other of the above sections so far as noted. The Mexican *hoegei* of Ohaus, would fall in this section by the above table but really forms a separate section because of a radically different system of elytral sculpture; here the series of punctures are not or at best scarcely at all impressed, while in *hoegei* they are very regularly and deeply sulciform, somewhat as in *Strigoderma;* the mesosternal epimera, however, do not seem to simulate in any way closely the ascending form assumed in the Strigodermids. The species at hand may be known by the following characters:

Elytral punctures unevenly spaced in the series.....2

Elytral punctures evenly spaced and close-set in the series. Central America.....9

2—Larger species, in the neighborhood of 10 mm. in length.....3
Smaller species, about 7 or 8 mm. in length; basal bead of the prothorax always strong and equal throughout the width; elytral punctures strong, more or less coalescent in short lines, the series more close-set, the second interval broad and confusedly punctate.....6
3—Hind tibiæ surate but more slender, between three and four times as long as wide in both sexes.....4
Hind tibiæ stouter and strongly surate, scarcely three times as long as wide.....5
4—Form rather short, stout and convex, evidently broader posteriorly, black above and beneath, the head and pronotum with feeble metallic lustre, the elytra pale brownish-flavate, irregularly black toward the sides, along the apex and in an inner larger and outer smaller discal spot just before the middle, the convex sutural interval also blackish, as are all the punctures; head very densely punctato-rugose, the clypeus flat, with the edges rather finely and subequally reflexed, trapezoidal, with rounded angles, not quite twice as wide as long; antennal club (♂) a little longer, or (♀) slightly shorter, than the entire stem; prothorax trapezoidal, widest at base, especially in the male, the angulation before the middle broadly rounded; apex sinuate, with prominent but blunt angles; base strongly lobed medially, with entire strong beading, the angles rounded; surface very finely, sparsely punctate, more strongly and closely near the sides and basal angles; scutellum sparsely punctured; elytra not or but little longer than wide, the series of very moderate punctures not or scarcely impressed, the second interval confusedly punctate; sterna and hind coxæ with rather dense, long and silky gray hair. In the male the entire body, legs and elytra are occasionally intense black throughout. Length (♂♀) 9.8–11.8 mm., width 5.3–6.4 mm. New York and Virginia, westward to Kansas. [*Melolontha unifasciata* Say; *Anomala marginella* Lec.]

binotata Gyll.

Form narrower, more elongate and still more cuneiform, similar in color and lustre to the preceding but with the darker parts rather more piceous-black and the elytra of a clearer and paler brownish-flavate throughout, the suture and side margin very narrowly piceous, and there is generally only a feeble trace of the inner of the two spots of the preceding species; head similar but with the clypeus more parallel basally and with a more distinct cluster of coarse punctures at the middle of the front; prothorax nearly similar but with the fine sparse punctures usually less distinctly denser laterally and with the basal bead completely obliterated at the middle; elytra much longer, about a fourth longer than wide, rather less (♀), the unimpressed series similarly disposed but with the punctures still finer and less dark in tint; legs dark rufous; sterna with abundant long hair. Female much stouter than the male, to a degree not observable in *binotata*. Male with the outer fine ramus of the larger anterior claw extending somewhat further toward the tip of the lower lobe than in *binotata*, the claw itself not quite so stout. Length (♂) 10.3–11.3,

(♀) 11.0 mm.; width (♂) 5.7–6.3, (♀) 7.0 mm. Arizona. [*A. luteipennis* Horn, Csy. nec Lec., olim]..... **ellipsis** n. sp.

5—Body nearly as in *binotata* but not quite so inflated posteriorly, the pale elytra with less of the suffused blackish coloration, the suture and side margin usually pale, the only distinct discal maculation being a black spot before the middle near inner third; head nearly as in *binotata* but rufescent and with the sides of the clypeus more parallel basally; prothorax similar in form but with the punctures notably larger throughout, well separated, decidedly coarse and denser laterally; basal bead narrowly subinterrupted medially; elytra a little longer than wide, with similar unimpressed series of irregularly spaced punctures, the latter, however, very much coarser and distinctly umbilicated. Male with the outer ramus of the larger anterior claw much coarser and longer than in *binotata* though distinctly shorter than the lower lobe; female as usual, having this claw more equally split. Length (♂♀) 9.7–10.4 mm.; width 6.0 mm. Mexico..... ***irrorata** Blanch.

Body (♂) nearly as in *binotata* but larger and much stouter, the pale elytra more suffused with black, this extending nearly through apical half, except a medial prolongation of the anterior pale area posteriorly on each elytron; lateral of the two spots united with the large humeral black area; legs black, with feeble violaceous lustre; head, clypeus and antennæ nearly similar, the prothorax similar in general form, lustre and sculpture but larger and with the basal bead narrowly subinterrupted medially; elytra similar in sculpture but much more inflated; abundant hairs of the sterna still longer and coarser. Male with the outer ramus of the larger anterior claw longer, not so thin and extending further toward the end of the lower than in *binotata;* hind tibiæ not only much stouter but more strongly sculptured, the tarsi stouter. Length (♂) 10.8 mm.; width 6.7 mm. Louisiana. **compacta** n. sp.

6—Body very stout and convex in form, evidently inflated posteriorly; scutellum very broadly margined.....7

Body more oblong-suboval, less convex and barely at all inflated posteriorly, the flat sculptureless margin of the scutellum much narrower and less definite.....8

7—Form oblong-suboval, widest behind, very shining, piceous-black, the abdomen in great part paler, the legs blackish; head rather small, not quite half as wide as the prothorax, densely punctato-rugulose, the occiput—extending forward broadly at the sides—finely, sparsely punctate; clypeus flat, with rather strongly reflexed edges, not quite twice as wide as long, with rounded angles, the sides but feebly diverging toward base; eyes very moderate; antennal club (♂) longer, or (♀) shorter, than the stem; prothorax widest at base, the sides feebly converging to about the middle, then more strongly to the apex, which is sinuate, with the angles about right; base lobed medially, with slightly obtuse and narrowly rounded angles; surface convex, not very finely, somewhat irregularly and sparsely punctate, not differently toward the sides; scutellum sparsely punctate; elytra in great part piceous-black, becoming nubilously pallid medially

toward base, to pallid and faintly, irregularly and nubilously darker at various parts of the suface, the punctures of the widely and irregularly separated, feebly impressed series coarse and dark-tinted, coarser and more confused toward the sides; pygidium opaque, with short sparse pale hairs; under surface with stiff and moderately long, not very close but conspicuous coarse yellowish hair. Male with the anterior claws very small, the stouter with the upper ramus very fine and short; female with the same claw very finely and minutely, almost symmetrically cleft at tip. Length (♂ ♀) 7.7–8.3 mm.; width 4.65–4.9 mm. New Jersey (Atlantic City). Rather abundant..... **umbra** n. sp.

Form nearly similar but not quite so stout, very shining, black or piceous-black, the legs rufescent, the elytra pale toward the scutellum; head nearly as in the preceding, except that the clypeus is smaller, shorter, more rounded, with the sides widely flaring toward base and the surface more concave, with much more widely reflexed margins, its general outline almost evenly transversely elliptical; prothorax nearly as in *umbra*, three-fourths wider than long, the sculpture similar but the sides are more evenly rounded and converge to the more acutely defined apical angles from behind the middle; elytra as in the preceding but a little narrower, a fifth longer than wide, the sculpture nearly similar but more evenly lineato-punctate near the sides and with the broadly confused punctures of the second interval closer and less coarse; subapical umbo similarly pronounced; under surface and legs nearly similar, the anterior tarsi (♂) very slender, the basal joint as long as the next two, the fifth as long as the preceding three, distinctly dentate beneath. Length (♂) 8.0 mm.; width 4.55 mm. Florida (Jacksonville)..... **servilis** n. sp.

8—Clypeus trapezoidal, the sides diverging toward base. Body elongate, suboval, moderately convex and shining, rufo-piceous throughout the body and legs, the elytra paler, brownish-flavate, confusedly and feebly mottled with a darker brownish tint, the rather coarse and deeply impressed punctures also darker, the disk sometimes dark only toward the sides; head fully half as wide as the prothorax, densely punctato-rugose, the clypeus about twice as wide as long, the apex feebly arcuate, merging gradually into the broadly rounded angles, the surface nearly flat, with strongly reflexed edges; eyes very moderate; antennal club (♂) scarcely longer than the stem; prothorax not quite twice as wide as long, the sides broadly rounded, gradually converging anteriorly, slightly converging posteriorly also near the base, which is broadly lobed medially, the angles very obtuse, rounded; apex sinuate, with moderately prominent right angles; surface convex, somewhat uneven, rather strongly and irregularly, moderately closely punctate throughout; scutellum strongly punctate, a spot at the centre sometimes smooth; elytra a fifth or sixth longer than wide, obtusely and evenly rounded behind in apical two-fifths, the series not much impressed, with three moderately prominent convex intervals on each, the series bounding the innermost, which is even more strongly defined toward apex, composed of more close-set and even punctures, the broad flat second interval

confusedly and closely punctate and rugulose; sterna rather finely, closely punctate, the hind coxæ much more coarsely and sparsely, both with rather abundant coarse yellowish hair. Male with the upper ramus of the larger claw of the anterior tarsi extremely small and fine, situated but little beyond the middle of the claw, the anterior tarsi shorter than in the two preceding species, the fifth joint rather shorter than the three preceding combined, dentate beneath. Length (♂ ♀) 6.7–8.8 mm.; width 3.8–4.9 mm. Louisiana (Vowell'-Mill—the type locality), Kansas, Indiana and Florida. [*A. pubescens* Blatchley] ..... **ludoviciana** Schf.

9—Form elongate-oval, strongly convex and shining, not inflated posteriorly, black above and beneath, the head, pronotum, scutellum and sutural interval of the elytra with strong, the under surface with feeble, greenish-metallic lustre; elytra uniform pale brown, with feeble greenish lustre at the extreme base, the sutural interval and side margins basally blackish-metallic; head evenly convex, rather finely, densely and very closely punctured throughout, feebly rugulose, the eyes moderate; clypeus broad and short, two and one-half times as wide as long, broadly arcuate at apex, with rounded angles, the sides becoming parallel at base, the edges well reflexed, except at the sides basally; antennal club (♀) much shorter than the stem; prothorax fully three-fourths wider than long, widest at base, the sides thence feebly converging and straight to the middle, there rounded, then more converging and straight to the moderately prominent though bluntly rounded apical angles, the basal slightly obtuse and rounded; base strongly and gradually lobed medially, the bead subobsolete at the middle; punctures even, rather widely separated, small but strong, a little closer and stronger laterally, the sublateral fovea coarse and very deep in the type; scutellum finely, sparsely punctate; elytra a fourth longer than wide, obtusely rounded at apex, the surface with rather even, close-set, unimpressed series of relatively small punctures, becoming a little larger but not confused laterally, the second interval very wide, confusedly and rather sparsely punctate throughout; middle coxæ slightly separated, the upper limit of the mesosternal process polished; hind legs very stout, the tibiæ strongly surate, very thick and shorter than the femora, the tarsi stout; anterior and middle tarsi with the larger claw subsymmetrically split at apex; anterior tibiæ with a single external tooth and apical process. Length (♀) 15.0 mm.; width 8.4 mm. Honduras (San Pedro Sula).... ***crassisura** n. sp.

Form nearly similar but with the elytra slightly inflated at the middle; coloration nearly similar, the lustre more coppery, the legs with viridi-cupreous lustre; elytra paler, brownish-flavate; head and prothorax almost similar throughout in form and sculpture, except that the clypeus is much less transverse, being only a little more than twice as wide as long, the eyes sensibly larger and the basal thoracic bead distinctly defined throughout; scutellum rather shorter, finely, sparsely punctate, cuprascent; elytra scarcely a fifth longer than wide, as in *crassisura* and with similar dark suture and external edges

basally but with the punctured series less approximate and the flat dark sutural interval has the minute punctulation stronger and very much closer; under surface and legs nearly similar, the metasternum more sparsely and evenly punctate medially; sternal pubescence similarly rather long and dense, except medially, the hind coxæ about as long as the metasternum and more coarsely and sparsely punctate than the latter. Length (♀) 13.8 mm.; width 7.7 mm. Honduras (San Pedro Sula).....*simulans n. sp.

Form more narrowly oval, less convex, much smaller in size, shining, dark rufous, the sterna slightly, the upper surface except the elytra much, darker, blackish, with greenish-metallic lustre; legs rufous; elytra pale brownish-flavate, the suture and external edge basally pale brown; head closely, rather strongly punctate, more finely and sparsely basally and densely subscabrous at the middle of the front and on the clypeus, which is rather more than twice as wide as long, broadly arcuate at apex, with broadly rounded angles, the sides becoming parallel only at the extreme base; edges rather strongly and rapidly reflexed, the flexure becoming obsolete at the sides only at base; eyes moderate; antennal club (♂) as long as the stem; prothorax in outline as in the preceding species, widest at base; surface finely but strongly, sparsely punctate, less finely and more closely toward the sides, the sublateral pit strong; basal bead entire and well defined throughout; scutellum finely, sparsely punctate; elytra a fifth longer than wide, feebly inflated about the middle, very obtusely rounded at tip, having regular and feebly impressed series of rather coarse deep punctures, becoming close-set and subconfused toward the sides, the second interval broad, with strong confused punctures, the narrow third interval feebly convex, more prominent posteriorly, where its bounding series become deeply impressed; minute sparse punctules of the sutural interval not differing from those of the rest of the surface; sterna black, feebly metallic, the middle coxæ rather narrowly separated, the tip of the mesosternal surface more pallid and shining but not tumid; metasternum strongly, densely punctate, the hind coxæ coarsely and sparsely, the pubescence moderate; hind tibiæ moderately thick, surate. Male with the larger claw of the anterior tarsi not very thick, its upper ramus long, thin, aciculate, not extending quite as far as the tip of the lower ramus. Length (♂) 9.5 mm.; width 5.5 mm. Isthmus of Panama (Colon).—Beaumont.....*colonica n. sp.

The difference in stoutness and in the extent of posterior dilatation between the males and females of *ellipsis* is not observable in *binotata*, and the former, which has been regarded heretofore as a variety of *binotata* and mistaken by Horn, and, following him by myself, for *luteipennis* Lec., is really well defined and not closely related to *binotata*. The small *umbra* and *servilis* are of a different type from *ludoviciana* and it is singular that *umbra*, of which a good series, taken at Atlantic City, was included in a collection of

Scarabæidæ which I received from Mr. John Sherman, Jr., has not been alluded to by Horn or Schaeffer. Mr. Blatchley very kindly sent me a typical example of his *pubescens* for examination and the species proves to be identical with *ludoviciana*.

The three Central American forms described above belong without much doubt in the vicinity of *cnethopyga* Bates, but none of them seems to bear more than a general resemblance to that species; there are doubtless a considerable number of Central American species of that type.

Section B (*minuta*).

The upper ramus of the larger claw of the anterior male tarsi, which becomes extremely short, fine and aciculate in the *ludoviciana* type of the preceding section, is here wholly extinct. Burmeister states under his description of *minuta* that it is "kaum sichtbar," but as can be demonstrated under ample magnification, there is really no trace of it, and the language of Burmeister was doubtless employed because of a hesitation to believe that the species could possess a character usually considered of generic value, in view of its perfectly harmonious facies in the general American series of *Anomala*. *Minuta* was confounded with *innuba* by our earlier authors, but its identity was finally determined by Ohaus. There are two species of this group before me as follows:

Form stout, convex, broader posteriorly, shining, rufo-piceous, the sides of the pronotum and base broadly, sometimes reduced to a small transverse median dash, yellow, the elytra blackish-piceous, darker at the humeral callus and becoming nubilously pallid broadly on the disk of each basally and at apex, glabrous above but having sparse short hairs on the sterna; head fully half as wide as the prothorax, the front finely, sparsely punctate, with a denser cluster medially, the clypeus short, transverse, broadly arcuate at apex, the sides feebly diverging basally, the angles broadly rounded, the surface flat, with strongly reflexed edges throughout, sparsely punctate, shining; eyes small; antennæ pale, the club slightly less so; prothorax not quite twice as wide as long, the sides parallel, feebly arcuate, rounding in almost apical half, the apex sinuate, with prominent angles; base broadly lobed, with strong entire bead, the angles obtuse, evidently rounded; surface finely but distinctly, sparsely punctate throughout; scutellum sparsely punctate; elytra a fifth or sixth longer than wide, slightly inflated behind, broadly and obtusely rounded at apex, the series of moderate punctures barely at all impressed, rather distinctly so and with coarser punctures laterad; intervals but feebly convex, the alternate ones scarcely more so, the

second broad, with broadly confused deep punctures; fourth and sixth each with a single series of smaller punctures; pygidium with rather close-set and distinct arcuato-lineate punctures. Length (♂ ♀) 6.7–7.3 mm.; width 3.8–4.0 mm. North Carolina (Southern Pines),—Manee. Abundant. [*Anomala minuta* Burm.].

minuta Burm.

Form narrower and less convex than in *minuta*, shining, the type black throughout the body and legs, the under surface slightly piceous; head relatively a little larger, three-fifths as wide as the prothorax, the front with a larger area of strong and rather close-set punctuation; clypeus narrower, with much more widely diverging sides basally, otherwise nearly similar, the edges strongly reflexed throughout; eyes small; antennæ black, piceous basally; prothorax narrower, convex, only three-fifths wider than long, similar, except that the basal bead is finer, the lobe rather more feeble and the sparse punctures everywhere stronger; scutellum smaller, more punctate; elytra but little longer than wide, less inflated posteriorly, with similarly very feebly impressed striæ, which are however very much more coarsely and deeply punctured, the coarse confused punctures of the second interval less defined because of admixture with a coarse transverse plicatulation of the general surface; intervals four and six with the punctures extremely minute; pygidium less transverse, similarly convex, the arcuato-lineiform punctures more close-set and very much stronger than in *minuta;* middle coxæ very narrowly separated as in the preceding. Length (♂) 6.7 mm.; width 3.5 mm. Florida (Marion Co.).....**mendica** n. sp.

It is quite possible that the single type of *mendica* may be a melanic modification of a normally paler species, but, as shown by form and sculpture, it is not closely allied to *minuta*. Of the latter I received a series of fourteen specimens, which do not vary in coloration, except in slightly paler or darker tints and in the extent of the large dark thoracic spot.

Section C (*flavipennis*).

This is the largest section of the subgenus *Paranomala*, and it occurs throughout all of the nearctic and neotropical provinces, excepting the northern Pacific coast regions. Many of the Sonoran forms are rather slender and frail insects, with very thin pallid integuments, there being comparatively few instances where a metallic thoracic lustre becomes very obvious. The numerous species in my collection may be identified by the following characters:

Middle coxæ rather well separated; body stout and more massive.....2
Middle coxæ very narrowly separated.....6

2—Hind tarsi not or scarcely longer than the tibiæ.....3
Hind tarsi much longer than the tibiæ in both sexes.....4

3—Body oblong-ovate, very shining, black, with strong metallic-green lustre above, except the elytra which are castaneo-rufous, black near the humeri and narrowly along the suture, becoming blackish throughout with paler nubilous streaks; under surface piceous-black, the legs black and moderately metallic, head punctato-scabrous, sparsely punctate basally, the clypeus densely sculptured, rather more than twice as wide as long, with broadly rounded angles, the edges rather broadly reflexed, except basally; antennal club not quite as long as the stem; prothorax relatively small, two-thirds as wide as the elytra, trapezoidal, very convex, smooth, finely, sparsely punctate; elytra broad, parallel, with arcuate sides, slightly longer than wide, the striæ feebly impressed and with rather small punctures, those of the second interval coarser and very confused and rugose along the middle of the interval; pygidium rather finely, moderately closely arcuato-punctulate, convex, polished, inner claw of the anterior tarsi (♂) moderately short and stout, cleft almost to the middle, the upper ramus extending as far as the lower and but slightly thinner. Length (♂) 13.0–13.4 mm.; width 7.7–7.8 mm. Mexico.
***cincta** Say

Body oblong, stout, convex, much smaller, shining, dark castaneous-red, the head, pronotum and scutellum sometimes piceous and feebly metallic; head well developed, the eyes rather large; front impressed, finely, not very densely punctate, polished throughout, the clypeus not quite twice as wide as long, much rounded, with obliterated angles, the parallel sides arcuate, the edges broadly and strongly reflexed, its surface shining, closely but feebly punctato-rugulose, feebly impressed at each side; antennal club (♂) much longer than the stem, or (♀) much shorter, as long as the five preceding joints; prothorax more than three-fourths as wide as the elytra, two-thirds wider than long, trapezoidal, with very evenly rounded sides, the basal angles rounded; basal bead strong, coarse and entire; surface convex, slightly uneven, finely, feebly and sparsely punctate; scutellum rather sparsely punctate; elytra very feebly inflated behind the humeri, barely visibly longer than wide, the striæ coarse, widely and deeply impressed, rather finely and closely punctate, coarsely and more remotely laterad, the punctures of the second and fourth intervals broadly confused and notably coarse, those of the sixth remotely and irregularly uniseriate; narrow intervals notably convex; pygidium shining, very sparsely and rather feebly arcuato-punctulate; larger claw of the anterior tarsi (♂) notably long and slender, cleft at apex, that of the female still longer and more slender but otherwise similar. Length (♂ ♀) 8.8–9.8 mm.; width 5.1–5.8 mm. Virginia (Fredericksburg) and New Jersey (Anglesea—H. W. Wenzel).
subquadrata n. sp.

4—Male with the head rather less than half as wide as the prothorax and with only moderately developed eyes, these not prominent and separated by about four times their width, being smaller than in the female of *flavipennis*. Body stout, oblong, subparallel, convex,

slightly alutaceous, black, with scarcely metallic lustre, the elytra pale brownish-flavate, the suture, fine marginal edge broader at base and two transverse series of long piceous dashes on the alternate intervals, black; under surface and legs piceo-rufous, the latter black distally; head and clypeus rather coarsely, densely punctato-rugose, the sides and occiput sparsely and more finely punctate; front not impressed medially; clypeus flat, rather more than twice as wide as long, broadly rounded and continuously so around the sides, the latter even becoming somewhat convergent at base, the edges all broadly and strongly reflexed; suture with a strong impression near each side; prothorax three-fourths wider than long, the sides feebly converging from the base, feebly arcuate, more rapidly rounded beyond the middle; surface convex, slightly uneven, strongly, not very finely, sparsely punctate, a little more strongly laterad, the entire basal bead strong but not very coarse; elytra not distinctly longer than wide, only feebly inflated, obtuse at apex, the striæ feebly impressed and coarsely, closely punctate, much less sulciform than in the preceding, the narrower intervals barely at all more convex, the second coarsely, confusedly punctate, the fourth in single line which becomes obsolete posteriorly; lateral series even, finer and less coarsely punctate; pygidium convex, the arcuate punctulation rather sparse and shallow. Male with the inner anterior claw moderately inflated behind the middle, abruptly bent at base, split in less than apical third, the upper ramus as long as the lower but notably thinner, very finely aciculate. Length (♂) 10.5 mm.; width 5.9 mm. Kansas (McPherson),—Knaus.

stigmatella n. sp.

Male with the head fully half as wide as the prothorax or wider and with notably developed and convex eyes, narrower in the female and with distinctly smaller and less prominent eyes.....5

5—Color black above, generally with feeble metallic lustre, the elytra pale brownish-flavate, the suture and marginal edge and rarely one or two discal spots, near the middle and arranged transversely, darker; under surface and legs black to piceo-rufous; head notably large, much more than half as wide as the prothorax, the prominent eyes (♂) separated by not quite twice their own width, or (♀) barely by three times, punctato-rugose, sparsely punctate basally; front feebly impressed; clypeus much rounded and with the edges strongly and broadly reflexed, more transverse and less rounded in the female; antennal club a little longer than the stem or equal thereto (♀); prothorax four-fifths wider than long, the sides broadly rounded, more so before the middle, feebly converging to subparallel from the base to beyond the middle, convex, not very finely, rather strongly, sparsely punctate, more strongly laterad; elytra slightly elongate, somewhat inflated; striæ feebly impressed, the three geminate pairs closely punctate, with the intervals more convex, smooth; second interval coarsely and confusedly, the fourth less coarsely, more uniseriately, and the sixth finely, confusedly and more axially, punctate; punctures laterally almost evenly serial and notably coarse; pygidium black or piceous, the arcuate punctures large,

deep, close-set and conspicuous. Male with the larger anterior claw rather slender, abruptly bent basally as usual, cleft in nearly apical third, the upper ramus much more slender than the lower but almost as long; in the female not differing so much as usual, the lobes more diverging, the upper relatively a little thicker. Length (♂ ♀) 10.5–11.7 mm.; width 5.8–7.0 mm. Southern Texas. Seven male examples and one female.....**luteipennis** Lec.

Color bright testaceo-rufous above and beneath, the elytra paler and more flavate; anterior parts never blackish, the tarsi more or less blackish, rather shining; head (♂) almost as large as in the preceding, with the large convex eyes separated by fully twice their widths, or (♀) with the eyes not quite so large and notably less prominent; front feebly impressed, with the usual close punctato-rugulose sculpture somewhat feeble, also pervading the clypeus, which is about twice as wide as long, transversely arcuate at tip, with widely rounded angles, the sides often continuously rounded, the apex widely and strongly reflexed; antennæ as in *luteipennis*, the club rather less elongate but longer than the stem in the male; prothorax nearly similar but with the rather fine sparse punctures feebler; elytra as in the preceding, with the fourth interval generally narrowly and confusedly punctured along the middle, but in one, from Vowell's Mill, broader and with the area of confused punctures much wider; pygidium convex, always testaceous, with the arcuate punctures shallower and sparser than in *luteipennis;* tarsal claws nearly similar. Length (♂ ♀) 9.0–11.0 mm.; width 5.2–6.3 mm. North Carolina (Southern Pines—regarded as the typical locality, as the type was sent by Zimmermann) to Louisiana (Vowell's Mill). [*A. dichroa* Mels.] Five males and one female, the latter, from Vowell's Mill, smaller and notably more slender than the male and represented above by the smaller dimensions.....**flavipennis** Burm.

A—Similar but on the whole rather larger, notably stouter and with stronger sculpture, as seen very well in extended series; head similar but with the eyes (♂) not so prominent, being separated by distinctly more than twice their own width and with larger and broader clypeus, or (♀) separated by nearly three times their width; prothorax similar but generally with the indefinite impression on the median line at basal third more evident; elytra nearly similar; disk rarely with one or two short longitudinal piceous lines before the middle not observable in any of my examples of *flavipennis;* pygidial sculpture rather closer and more pronounced as a rule, the claws similar. Female relatively not so slender as in *flavipennis*, similarly rare in individuals. Length (♂ ♀) 9.5–11.5 mm.; width 6.0–6.8 mm. Kansas (McPherson and Lucas). Abundant. Fourteen males and two females. **modulata** n. subsp.

B—Nearly similar but rather more elongate; head (♂) nearly as in *flavipennis*, the concave clypeus with the sides arcuate from the base through the apex and broadly, strongly reflexed, the eyes separated by but slightly less than twice their width; prothorax similar but with the sides more rounded, becoming relatively

more converging apically, the medial impression at basal third distinct but similarly shallow; elytra longer, similarly sculptured, pale brownish-flavate, the type nubilate with brown in certain discal areas before the middle and also about the humeri; pygidium more shallowly and sparsely arcuato-punctulate than in either of the preceding. Length (♂) 11.2 mm.; width 6.0 mm. A single example, received from a European dealer and marked "Cal." but probably in error—possibly from Arizona.

amissa n. subsp.

Color testaceous, the head, pronotum, suture, margin, sides of the elytra basally and the legs reddish, shining, the form somewhat as in *binotata;* head coarsely and densely punctate; clypeus transverse, the apex subtruncate, the angles rounded and the margins moderately reflexed, the suture distinct; prothorax shining, convex, sparsely punctate, the sides slightly arcuate; hind angles rounded, the anterior not prominent; scutellum coarsely punctate; elytra expanding apically, the intervals clearly defined and alternately wider, the broader intervals flat, irregularly punctate, the narrower intervals slightly convex and almost impunctate; metasternum clothed with rather long hairs, the abdomen shining and sparsely punctate; pygidium transverse, subconfluently punctate, the punctures not deeply impressed; anterior tibiæ with a single external tooth, the apical process elongate and slightly curved, the tooth prominent but obtuse, the larger tarsal claw cleft at tip, the upper ramus (♂) finer and shorter than the lower, or equal thereto (♀), the larger claw of the intermediate tarsi cleft at tip, the upper process nearly as long as the lower but narrower. Length (♂) 11, (♀) 13 mm.; width (♂) 7, (♀) 7 mm. Lower California (Santa Rosa)..**peninsularis** Schf.

6—Mesosternal process flat, depressed; sterna more or less pubescent..7

Mesosternal process in the form of a narrow feeble convex ridge; under surface glabrous or virtually so; species of small size.....17

7—Pronotum unicolorous. Form oblong-elongate, rather convex, piceous, with slightly metallic lustre, the elytra pale brownish-flavate, the suture finely and side margin basally, black; head densely punctato-rugulose, sparsely punctate basally, the eyes (♂) separated by two and one-half times their width; clypeus flat, broadly trapezoidal, the apex rather abruptly and moderately reflexed; antennal club (♂) not quite as long as the stem; prothorax trapezoidal, with feebly, medially subangulate sides, minutely, remotely punctate, the basal bead entire; elytra slightly elongate, sculptured as in *flavipennis* but more finely, the three narrow smooth intervals very moderately convex; pygidium sparsely and strongly arcuato-punctate; inner anterior claw (♂) stout, deeply incised at apex, the upper ramus as long as the lower but much more slender, very finely aciculate. Length (♂) 12.0–12.6 mm.; width 6.8–7.3 mm. Honduras (San Pedro Sula). Four examples.....***ochroptera** Bates

Pronotum unicolorous. Body somewhat as in the preceding but still more elongate, black, slightly piceous beneath, the lustre barely at all metallic; elytra colored as in *ochroptera;* head (♂) nearly similar but with slightly more prominent eyes, which are separated by but

little more than twice their width; prothorax similar throughout, except that the basal lobe is not evenly rounded but broadly, rectilinearly truncate, the beading strong and entire, the punctures very fine and sparse; basal angles broadly rounded; scutellum similarly finely, sparsely punctate and with broad punctureless margins; elytra similar but notably more elongate, slightly inflated posteriorly, very rapidly and transversely obtuse at apex, the sculpture almost exactly similar; pygidium very different, longer, blacker, convex, with the short, transversely arcuate quasi-punctuation much denser, finer and greatly confused, compacted and interlacing basally; tarsal claws (♂) almost similar but with the lower ramus of the inner anterior claw much more obtuse at apex and with the point more deflexed, the apex being almost obliquely truncate, which is not in the least suggested in *ochroptera*. Length (♂) 13.5 mm.; width 7.4 mm. Honduras (San Pedro Sula). A single specimen.

***longipennis** n. sp.

Pronotum never unicolorous, always having a more or less extended discal dark area, the sides, at least, invariably pallid and generally with a small medial dark spot.....8

8—Body stout and compact, somewhat as in the *binotata* section, the elytra varying from entirely black, with a small pale basal area near the humeri, to entirely pale brownish-flavate and more or less clouded with brownish postero-externally and with the suture, sides, except basally, and humeral callus alone black or blackish. Lustre shining; head with the punctures rather strong and narrowly separated throughout, becoming very minute and remote basally, the clypeus flat, densely punctato-rugulose, transversely trapezoidal, with broadly rounded angles, the eyes very moderate in size, but little larger (♂) and separated by four to five times their width; antennal club much shorter than the stem in both sexes; prothorax nearly twice as wide as long, the sides arcuate, becoming parallel basally and convergent apically, the sinuate apex with acutely prominent angles; base very broadly lobed, with narrowly rounded angles, the bead feeble or interrupted narrowly at the middle; surface with a large transverse, posteriorly angulate anterior spot, to wholly blackish, excepting the side margins, minutely, sparsely punctured throughout; scutellum loosely but much less finely punctate; elytra rather strongly inflated behind the humeri, but little longer than wide, each with three rather pronounced convex costæ, separated by broad flat, broadly and confusedly punctate intervals, and defined by closely punctate impressed series, the flanks confusedly punctate; pygidium with the transversely arcuate scratches close-set and rather strong, smaller and more separated in the female; anterior tarsi (♂) with the larger claw stout, angularly prominent internally near the base, with the upper ramus of the bifid apex as long as the lower and but slightly more slender, or (♀) with the larger claw more slender, not swollen internally and with the upper of the apical lobes similar to the lower but distinctly exceeding it in length; pubescence of the sterna rather short and inconspicuous; anterior tibiæ with two external teeth and an apical process in both sexes, the upper tooth very short and

rudimentary but evident. Length (♂♀) 10.0–10.8 mm.; width 6.0–6.7 mm. Arizona. Four examples.....**nimbosa** n. sp.

Body much less stout to notably slender, the elytra always very pale, having thin integuments, the elytral suture, side margin or humeral callus sometimes dark.....9

9—Prothorax very short and transverse, always evidently more than twice as wide as the median length.....10

Prothorax much less transverse, never quite twice as wide as the median length.....11

10—Body oblong, subparallel, barely at all inflated posteriorly, pale, the pronotum with the dark area much comminuted and sometimes wanting, very nubilous; elytra with the suture and humeral callus alone darker to nearly black; head (♀) but little more than half as wide as the prothorax, with short and very transverse, almost semi-elliptical clypeus, which is closely but rather discretely punctate and with moderately reflexed edges; front sculptured like the clypeus; elsewhere minutely and remotely punctulate; eyes very moderate, separated by fully three times their width; prothorax very transverse, almost as wide as the elytra, much more than twice as wide as the median length, the apex broadly, deeply sinuate, with prominent acute angles from above, right when viewed sublaterally; base with a fine but entire bead; surface with rather small but strong, very sparse punctures; scutellum with dispersed punctures basally only; elytra slightly elongate, rounding apically from slightly behind the middle, having very even and close-set series of rather coarse, deep punctures throughout the width, the second interval irregularly biseriately punctate, becoming broadly and confusedly so basally; scutellum with the sparse arcuate lines so short and deep as to form almost regular small rounded punctures. Length (♀) 9.7 mm.; width 5.0–5.4 mm. Mexico (Jalapa). The male is described as having a much larger head and unusually large and conspicuous eyes.

*__megalops__ Bates

Body gradually much inflated behind or very distinctly cuneiform, moderately convex, shining, with very thin integuments, pale luteo-flavate in color, the head and a large anterior transversely subquadrate pronotal spot pale red-brown; elytra with the suture narrowly brown, the humeral callus black, the external margin pale, except the fine brown beading; head (♂) four-sevenths as wide as the prothorax, the clypeus and front to a transverse line through the middle of the eyes, uniformly and very roughly punctato-rugose, abruptly behind that line becoming discretely and rather strongly punctate; eyes very prominent, separated by barely more than twice their width; clypeus very transverse, moderately reflexed at apex, becoming parallel at base, with very broadly rounded angles; antennal club rather thin, not quite as long as the stem; prothorax slightly more than twice as wide as the median length, the sides rounded, becoming subparallel in basal, converging in apical, half, the prominent apical angles finely blunt at their apices, the basal rather narrowly rounded; basal bead fine but entire, in level below the general surface, which is evenly convex, extremely minutely and remotely

punctulate; sublateral dark spot evident; scutellum rather closely and more strongly, subrugosely punctate, with sharply limited smooth margins; elytra subcircularly rounded apically from slightly behind the middle, a fourth longer than wide, with slightly uneven and scarcely at all impressed series of very moderate punctures, which become close and confused at the sides, stronger and broadly confused along the second interval, the three costuliform intervals but feebly convex; pygidium with well separated and very feeble transversely wavy scratches; anterior tarsi missing in the type. Length (♂) 9.3 mm.; width 5.0 mm. Arizona..... **delicata** n. sp.

11—Form strongly cuneiform, a blackish sutural vitta bifurcating and surrounding the scutellum, which, like the head and pronotum, is pale testaceous. Elytra, excepting a very narrow equal sutural line, and entire under surface and legs pale brownish-flavate, not at all darker externally or at the humeral callus; head (♀) large, three-fifths as wide as the prothorax, with large prominent eyes, separated by barely twice their width, the front and clypeus densely punctato-rugose, the latter more than twice as wide as long, almost semi-elliptical, the surface feebly, indefinitely impressed at each side and rather narrowly but abruptly reflexed throughout the contour; antennal club rather long and thin, a little shorter than the stem; prothorax three-fourths wider than long, feebly trapezoidal, the sides slightly swollen medially, the apical sinus shallow, the angles sharp; basal bead rather narrow, flat, entire and not at all depressed; surface minutely, remotely punctulate, broadly flavate with included small dark spot at each side; scutellum finely, remotely punctate; elytra slightly elongate, gradually broadening from the base, very rapidly transversely rounded at apex; surface with rather irregular and wholly unimpressed series of very fine feeble punctures, the second interval with the punctures slightly more distinct, narrowly confused along the median line, becoming broadly so throughout its width basally; pygidium with rather small but strong sparse punctures; larger anterior tarsal claw (♀) very slender, with the apex extremely unequally split, the upper ramus rather thick and much prolonged, the lower very fine and aciculate and not half as long as the upper ramus. Length (♀) 11.0 mm.; width 6.0 mm. Mexico. A single example received under the name *höpfneri* Bates, which it evidently is not, as can be seen from the form of the inner anterior tarsal claw..... ***digressa** n. sp.

Form not or but slightly cuneiform, the darker sutural stripe when present never enveloping the scutellum..... 12

12—Clypeus rather strongly narrowed to the apex; body unusually small in size. Elongate-oval, pale testaceous; prothorax with a median darker space, which extends laterally on each side at the middle as a narrow line not quite to the side margin; head rather coarsely punctate, the eyes not prominent; antennal club as long as the stem; clypeus rounded and reflexed at apex, the sides scarcely reflexed, the suture straight, distinctly impressed; prothorax at base twice as wide as long, the sides feebly arcuate, obliquely narrowing apically, parallel basally; anterior angles acute, the posterior rounded;

surface rather sparsely punctate, more densely and slightly more coarsely laterad, having an impressed longitudinal line at the middle; elytra at base slightly narrower than the thoracic base, gradually widening toward apex, the three costæ distinct, feebly convex and very finely, irregularly punctate; subsutural and second intervals with a more irregular row of coarse punctures than those of the geminate rows enclosing the costæ; at the sides the punctures form almost regular rows; pygidium convex, rugose, sparsely hairy at tip; under surface coarsely punctate; metasternum with a few erect hairs; front tibiæ with a single external tooth, the apical process elongate, curved; inner claw of the anterior tarsi (♂) very feebly cleft, the upper portion extremely slender and short, that of the intermediate tarsi scarcely visibly cleft. Length 7 mm. Arizona (Bakersville?)..... **clypealis** Schf.

Clypeus transverse, moderately arcuate at apex, with broadly rounded angles and sides that either diverge slightly or become parallel basally; size not so small..... 13

13—Basal bead of the pronotum entire but extremely fine and depressed slightly below the general surface. Body almost evenly elongate-oval, convex, rather shining, pale brownish-flavate above and beneath, the head dark brownish-rufous, the pronotum at apex with a large medial spot of dark brown, which is prolonged posteriorly along the median line, generally in a narrow line, the elytra with the suture and outer edge, sometimes very broadly toward tip, piceous or blackish; head rather shining though densely but not coarsely punctato-rugulose, the eyes very moderate, not differing much sexually, separated by three times their width; clypeus rather broadly and strongly reflexed, obsoletely at base, where the sides become parallel; antennal club (♀) small, as long as the five preceding joints; prothorax distinctly less than twice as wide as long, the sides rounded, converging apically, the basal lobe broad and rather feeble; basal angles broadly rounded, the apical sharp but more than right, the sinus shallow; punctures minute and very sparse throughout; elytra slightly elongate, rounded apically from slightly behind the middle, very feebly inflated medially, only slightly wider than the prothorax, having regular and evenly spaced rows of rather strong punctures, coarser laterad, where the rows become somewhat impressed, the second interval broad, confusedly and strongly punctate, broadly basally, more narrowly posteriad; pygidium convex, shining, having the short arcuate scratches feeble and sparse. Male with the upper ramus of the inner anterior claw very short and slender, the female with the inner claw cleft at apex, the lobes subequal, the upper projecting evidently beyond the lower. Length (♂♀) 7.8–9.0 mm.; width 4.2–4.5 mm. Lower California (Santa Rosa). Four examples..... **centralis** Lec.

Basal thoracic bead not so fine and always interrupted medially..... 14

14—Eyes in the male only moderately prominent, more widely separated; elytral punctures deeper and more conspicuous..... 15

Eyes in the male very convex and prominent, separated by about twice their width; elytral punctures feeble and rather indistinct..... 16

15—Form oblong-suboval, very shining, pale flavo-testaceous, the head dark rufous, with barely visible metallic lustre, the pronotum with a very large blackish area having a similar lustre and extending through more than median half at apex, broad at base, with its sides bisinuate and with a broad basal anteriorly emarginate pale area medially at base, the sublateral dark dot feeble, the elytra pale, black at the sides basally and again apically and with the suture also narrowly black; head rather coarsely, deeply and densely punctato-rugose, the punctures smaller and separated on the occiput; clypeus much more than twice as wide as long, the edges moderately and not broadly reflexed, the sides broadly rounded from the apex to the base, where alone they become parallel; eyes separated by rather more than three times their width; antennal club not quite as long as the stem; prothorax distinctly less than twice as wide as long, the sides almost evenly arcuate and feebly converging from the broadly rounded basal angles to the sharply marked right apical angles; basal lobe rather broad and feeble; punctures small but deep and sparse throughout, not coarser but finer laterad; surface convexly sloping to the basal bead laterally but not medially, where the interruption is narrow; scutellum finely but more closely punctate basally; elytra a fourth longer than wide, circularly rounded behind the middle, barely at all inflated, a little wider than the prothorax, the punctures rather coarse, deep and conspicuous, close-set in rather even and widely spaced rows, the narrower interspaces feebly convex, the second interval broad, confusedly punctate along the middle, the fourth and sixth each with a widely spaced irregular single series of smaller punctures; series even on the flanks; pygidium convex, the arcuate scratches coarse, rather strong and somewhat anastomosing; inner claw of the anterior male tarsi rather slender, cleft at tip, the upper ramus very thin and much shorter than the lower. Length (♂) 9.8 mm.; width 5.1 mm. Arizona.....**arida** n. sp.

Form more elongate-oval, convex, shining, the coloration nearly as in *arida*, except that the large thoracic dark area is broadly detached from the base in the type and still more contracted in other examples, and the external margin only narrowly and feebly brownish, the humeral callus generally deep black; head larger, very differently sculptured, not in dense confused deep punctures as in the preceding, but in a coarse shallow irregular reticulation, replaced posteriorly by small sparse punctures, the clypeus not so transverse and more trapezoidal, the sides straight and distinctly diverging basally, the angles not so broadly rounded; edges similarly reflexed throughout; antennal club rather thin, distinctly shorter than the stem; eyes larger and more prominent, separated by less than two and one-half times their width; prothorax as in *arida* but more nearly twice as wide as long, not so shining, with the punctures very much finer and feebler, very sparse and the surface sloping less strongly or rapidly to the basal bead, the latter more broadly interrupted medially; scutellum similar but with a much broader impunctate margin; elytra very much more elongate, fully two-fifths longer than wide, more rapidly rounding behind in about apical third,

very feebly submedially inflated; punctures rather strong but less impressed, the series feebly impressed, nearly regular, the intervals 2–4–6 nearly similar but with the punctures sparser, not so coarse on the second and confused near the sides; pygidium convex, the short arcuate scratches rather feeble and sparse; inner claw of the anterior male tarsi thicker than in *arida* and much more deeply cleft at apex, the upper ramus not very thin and extending almost as far as the lower. Length (♂) 10.5–11.6 mm.; width 5.5–6.2 mm. Arizona (Boboquivari Mts. and Cochise Co.)....**papagoana** n. sp.

16—Body elongate-oval, convex, shining, pale testaceo-flavate, the head and pronotum pale and uniform brownish-rufous, the latter broadly and evenly flavate at the sides, with the dark spot diffuse; elytra with the suture alone narrowly pale brown; head very large, two-thirds as wide as the prothorax, the median part of the front and the clypeus densely and rather finely punctato-rugose, the remainder sparsely, rather finely punctate; clypeus short, trapezoidal, with broadly rounded angles and narrowly and sharply reflexed edges; eyes very large and prominent, separated by less than twice their width; prothorax less than twice as wide as long, evenly trapezoidal, with straight sides, becoming subprominent and arcuate in median third; apex transverse, sinuate at each side, the angles not prominent and with their tips blunt; basal angles but narrowly rounded, the lobe rather pronounced, the bead very broadly interrupted medially; surface minutely, feebly and very sparsely punctate throughout, not at all sloping to the bead at base; in the type, there is at each side near the apex, an oblique deep sulcus extending from the apical margin not quite to the side margin, which may be accidental; scutellum finely, sparsely punctate, except along the middle and at the broad smooth margins; elytra long, fully two-fifths longer than wide, broadly, feebly inflated except basally, circularly rounded in about apical two-fifths, the punctures fine and feeble in slightly irregular and unimpressed series, confused laterad, the itervals all nearly flat, the second rather broad, with a median line of irregular punctures, becoming sparsely diffused basally; pygidium convex, the arcuate scratches feeble and sparse; larger anterior claw of the male slender, gradually finely and somewhat obliquely pointed, with an excessively short fine ramus on the upper side at apical third. Length (♂) 9.8 mm.; width 5.0 mm. Arizona....**sagax** n. sp.

Body less elongate, shining, pale luteo-flavate throughout, the head pale rufous, the pronotum (♂) with a large semicircular brown spot at apex, the diameter lying on the apical margin, or (♀) wholly pale red-brown, the side margins flavate; elytra with the suture alone pale brown; head (♂) not quite three-fifths as wide as the prothorax, densely punctato-scabrous before, sparsely puncate behind, a line through the middle of the eyes, which are very prominent and separated by barely more than twice their width; antennal club not quite as long as the stem; prothorax not quite twice as wide as long, the sides slightly converging behind, and more so before, the more rounded median part, the apex regularly sinuate, with rather sharp angles; basal angles obtuse, narrowly rounded, the bead strong, sometimes

traceable across the middle, the lobe broad and moderate; surface at base not sloping toward the bead, minutely, remotely punctulate throughout; scutellum more strongly and less sparsely punctate; elytra barely a fourth longer than wide, rather inflated, more than one-half wider than the prothorax, rapidly rounding behind in about apical third; punctures not very fine but shallow and inconspicuous, sparse in rather even and widely spaced lines, the second interval very broad, sparsely and confusedly punctate; pygidium with the arcuate scratches feeble and sparse; inner anterior claw differing completely from the preceding, rather stout, feebly and subangularly prominent beneath behind the middle, very coarsely and deeply cleft at apex, the upper ramus not differing very much from the lower, both rather deflexed, unusually diverging and very acute at apex, the upper distinctly shorter than the lower. Female smaller and narrower than the male as in *flavipennis*, the antennal club small, much shorter than the stem, the eyes smaller and much less prominent; larger anterior claw slender, subevenly bifid at apex. Length (♂♀) 8.4–9.2 mm.; width 4.6–5.4 mm. Arizona. Two specimens..... **moquina** n. sp.

17—Elytra pale, with fasciate maculation, never entirely black; larger anterior claw different in the sexes..... 18

Elytra usually deep black throughout, when pale rarely having fasciate but rather longitudinal and very feeble marking; larger claw similar in the sexes..... 20

18—Pronotum wholly dark in color. Body elongate-oval, rather convex, shining, blackish, the under surface and legs piceo-rufous; elytra tawny-yellow, the sutural interval and external bead blackish, the disk with a transverse irregular black fascia before the middle, uniting with a large humeral black area; head, pronotum and scutellum with distinct metallic lustre; head with separated punctures, smaller basally, except in a medial anterior frontal pit, which is more densely punctate, the clypeus trapezoidal, twice as wide as long, with broadly rounded angles and rather feebly reflexed edges, its surface densely punctato-rugose, somewhat impressed medially along the suture; eyes moderate; prothorax not quite twice as wide as long, the sides evenly rounded and converging from base to apex, the latter sinuate, with sharp prominent angles; base broadly and feebly lobed, the bead strong and entire, the angles not very broadly rounded; surface finely but distinctly, sparsely punctate throughout; scutellum sparsely and a little more strongly punctate; elytra with even impressed series of moderate punctures to the sides, the second interval wide, irregularly and subbiseriately punctate along the middle; fourth and sixth with single series of smaller punctures, 3–5–7 moderately costuliform and smooth; pygidium dark, shining, convex, having the wavy scratches deep and rather closely anastomosing, under surface glabrous. Length (♀) 8.5 mm.; width 4.3 mm. Honduras (San Pedro Sula)..... ***crucialis** n. sp.

Pronotum never wholly dark, always at least pale along the sides.... 19

19—Elytra each always with a small rounded dark spot near the apical margin and at some distance from the suture, this being the only

marking to remain when the elytra become otherwise wholly pale; body smaller and more abbreviated in form, also more inflated posteriorly; color blackish, the abdomen, femora and prosternum paler; head dark, paler anteriorly and on the clypeus, densely, rugulosely punctate, sparsely punctate basally, the eyes small in both sexes; clypeus transversely semi-elliptical, the edges very moderately reflexed; antennal club three-fourths the length of the stem (♂), two-thirds (♀); prothorax twice as wide as the median length (♀), distinctly less (♂), black and feebly submetallic, with pale sides, to pale, with a large transverse, posteriorly angulate apical spot, the sides broadly, subevenly rounded and converging to the sinuate apex, the apical angles prominent and acute, the basal moderately rounded; basal bead very fine, entire; surface slightly uneven, convex, strongly, deeply and moderately closely punctate, the scutellum sparsely and less strongly; elytra wholly pale or with two more or less developed transverse wavy fasciæ of blackish tint, only a little longer than wide, the even impressed striæ close-set and rather coarsely, deeply punctate to the sides; second interval alone broadened, coarsely and confusedly punctate throughout; pygidium generally with a marginal impression at each side, convex, rather dull, the transverse scratches rather strong, not very dense but anastomosing; sterna glabrous. Male with the larger anterior claw abruptly bent at base, rather stout and slightly swollen internally, cleft apically nearly to the middle, the upper ramus very long, unusually diverging, nearly as long as the lower but much more slender and aciculate; female with the same claw more slender and almost symmetrically bifid at tip, the incisure less deep. Length (♂ ♀) 7.0–8.0 mm.; width 3.8–4.4 mm. Virginia to Florida (Palm Beach) and westward to Kansas and Nebraska. Abundant. [*Euchlora maculata* Cast., and *Melolontha varians* Fabr. (pars),—nomina præocc.]..... **undulata** Mels.

Elytra never with the small rounded subapical spot; body larger, more convex and much more elongate in the typical form. Elongate-oval, shining, pale luteo-flavate, the head rufous, black basally, the pronotum black, pale at the sides and sometimes along the base medially, the elytra with two irregular fasciæ of detached elongate spots; under surface wholly black, except the abdominal apex, to wholly pale, the legs pale with blackish tarsi; head and pronotum generally with feeble metallic lustre; head and clypeus less densely sculptured, sparsely punctate basally, the clypeus shorter and more trapezoidal, with rounded angles; eyes rather small; antennal club nearly as in *undulata* but thicker and still shorter in both sexes; prothorax much less abbreviated, only three-fifths to two-thirds wider than long, the surface smoother and more even and with the punctures very much finer and sparser, otherwise nearly similar, except that the entire basal bead is less fine and flatter; scutellum much more strongly and closely punctate than the pronotum; elytra much more elongate, broader in the male, a fourth to two-fifths longer than wide; striation as in *undulata* but finer and feebler, the strial punctures much smaller, the broad second interval with the broadly confused punctures smaller

and more widely separated; pygidium much more shining, blackish to pallid, convex, the arcuate scratches shorter, much sparser and very much stronger, sometimes punctiform; tarsal claws somewhat as in *undulata*. Length (♂♀) 7.8–9.5 mm.; width 4.0–4.9 mm. North Carolina and Kentucky to Florida (Lake Worth). Very abundant..... **nigropicta** n. sp.

A—Similar but rather smaller and more slender, very convex, shining, similarly colored, except that the black maculation of the elytra is much more developed and confluent, both transversely and longitudinally, frequently showing the pale ground color only as small detached dashes and spots; head similar, the trapezoidal clypeus not quite so abbreviated; prothorax similar but less elongate and relatively smaller, nearly twice as wide as long (♀), smaller, less transverse and more conical (♂); elytra nearly similar; pygidium with the sculpture less strong and more closely confluent; antennal club longer in the male but shorter in the female, in the latter barely as long as the preceding five joints. Length (♂♀) 8.0 mm.; width 4.4–4.7 mm. Canada (Ontario). Two examples. **canadensis** n. subsp.

B—Nearly similar but shorter and more reddish in color; the rufous head has the clypeus smaller and shorter than in the preceding and is more nearly semi-elliptical as in *undulata;* prothorax as in *nigropicta* but with the small punctures still more remote discally though much more close-set near the sides; they are everywhere a little stronger but not at all as in *undulata;* elytra only a fifth longer than wide, the regular series of very moderate punctures not impressed, the much smaller confused punctures of the second interval much smaller; pygidium shining, the irregular confluent wavy lines rather strong, much closer than in *nigropicta* and more closely resembling those of *undulata*, but coarser and with much more shining surface; inner claw of the anterior tarsi (♀) slender, strongly and evenly arcuate, bifid in only apical fourth or fifth, the upper ramus distinctly more slender than the lower and not quite so long. Length (♀) 8.4 mm.; width 4.5 mm. Florida (Key Largo). One specimen..... **floridana** n. subsp.

C—Form nearly as in *undulata* but larger and stouter, similar in coloration, except that, as in the case of *nigropicta* and allied forms, no example having the detached anterior thoracic area so frequently seen in *undulata*, are at hand, all being black, with pale side margins; clypeus relatively large, trapezoidal, with rounded angles; antennal club (♂) nearly as long as the stem, or (♀) three-fourths as long; prothorax as in *nigropicta*, less abbreviated, smoother and more finely and less conspicuously punctate than in *undulata;* scutellum generally pale, sparsely punctate; elytra but little longer than wide, more inflated near the middle than in any of the preceding, the black maculation of the two fasciæ in detached spots nearly as in *nigropicta*, the striæ of rather small deep punctures wholly unimpressed, the confused punctures of the second interval rather small and well separated; pygidium nearly as in

floridana. Male with the inner anterior claw rather less deeply cleft than in *undulata* but otherwise nearly similar; female with this claw shorter, less slender and much less arcuate than in *floridana*, with the apical cleft deeper, though much smaller, less deep and more symmetrical than in the male, as usual in the *undulata* section; sterna subglabrous as in the latter. Length (♂ ♀) 8.0–8.5 mm.; width 4.6–4.8 mm. Indiana to Kansas. Six specimens. . . . . **saginatula** n. subsp.

20—Body very small in size, shining, piceous-black, sometimes deep black, the elytra occasionally with faint indefinite paler shading and the pronotum rarely pale at the sides and medially at base; head and pronotum with very feeble metallic lustre; head rufescent except basally, densely punctato-rugose, especially toward the median parts of the front, sparsely punctate basally; clypeus moderately reflexed, the outline subtrapezoidal, with broadly rounded angle, to semi-elliptic, the latter more especially in the male; eyes very moderate; antennal club (♂) nearly as long as the stem, shorter (♀); prothorax nearly twice as wide as long in the latter, narrower and more conical in the male and with less rounded sides, these being strongly rounded in the female; the general form and strong and only moderately sparse punctures are as in *undulata;* scutellum sparsely punctured, less strongly than the pronotum; elytra coarsely, rather deeply, regularly striate, the striæ coarsely punctured, the second interval with strong, broadly confused, subrugose punctuation; disk occasionally with a small pallid point at the middle, near inner third, and a larger one externally before the middle, and also with the apical margin pallid, thus indicating that the intensely black coloration may only be an extreme development of the fasciate ornamentation of *undulata*; pygidium piceous to pallid, with rather strong wavy anastomosing sculpture. Male with the larger anterior claw almost exactly as in *undulata*, the female, however, with the claw almost as in the male, the lower lobe a little thinner, that sex more readily distinguishable by the size of the antennal club, broader, more rounded prothorax and by the thinner and less sinuous apical beading of the last abdominal segment. Length (♂ ♀) 6.6–7.9 mm.; width 3.7–4.3 mm. Pennsylvania to Florida and westward to Nebraska. Twenty examples. [*Anomala undulata dubia* Blatch.] **innuba** Fabr.

A—Similar in general characters but more elongate, pale and uniform piceous-brown in color throughout, the head and pronotum slightly more rufous and with very faint metallic lustre; head similar, the clypeus more than twice as wide as long, trapezoidal, with broadly rounded angles and feebly arcuate apex; antennal club (♂) distinctly shorter than the stem; prothorax as in the male of *innuba* but shorter, twice as wide as long and about a third as long as the elytra; in *innuba* it is always much more than a third as long as the elytra; punctures a little smaller, sparser and less conspicuous; basal bead similarly very fine as in *undulata*, entire; elytra as in *innuba* but sensibly more elongate, a third longer than wide, similarly sculptured and rugulose, the second interval with some

coarser transverse rugæ; pygidium similar; sterna similarly subglabrous and coarsely punctured laterad. Length (♂) 7.8 mm.; width 4.0 mm. Florida.....**piceola** n. subsp.

Body sensibly larger and stouter than in *innuba*, deep shining black as a rule, the abdomen and legs more or less piceo-rufous; in two male specimens, however, the pronotum is flavate along the sides and along the base medially and the elytra wholly pale brownish-flavate, the longitudinal subexternal darker, cloud-like shadings extremely feeble, terminating on the subapical umbo in a rounded darker spot as in *undulata;* head black and sparsely punctate, the clypeus pallid; median parts of the front more or less concave and densely punctato-rugose like the clypeus, which is transverse, almost semicircular and with abruptly but narrowly reflexed edges; antennal club (♂) almost as long as the entire stem, or (♀) very much smaller, not longer than the five preceding joints; prothorax not differing so much sexually as in *innuba*, not quite twice as wide as long, the sides broadly rounded, subparallel, becoming more rounded and convergent in nearly apical half; apex and base nearly as in *innuba*, the punctures strong but sparse, not much closer though a little stronger laterad; scutellum punctured like the pronotum but more closely, though very irregularly; elytra with close-set, even and barely at all impressed series of moderate but deep punctures, the second interval very broad and confusedly though not densely and not quite so strongly punctate throughout; pygidium with well separated but transversely confluent, strong and wavy scratches; anterior tarsal claws nearly as in *innuba* in both sexes. Length (♂♀) 7.5–8.0 mm.; width 4.0–4.4 mm. Kansas (Medora, Onaga and Benedict). Eight males and one female.....**medorensis** n. sp.

I have placed *peninsularis* Schf. near *flavipennis*, as this is the disposition made of it by Mr. Schaeffer in his table of *Anomala* species (Journ. N. Y. Ent. Soc., 1907, p. 70), but have not seen any representative; the female is much larger than the male, while in *flavipennis* my material seems to show that the female is distinctly smaller, narrower and more cylindrical than the male. Mr. Schaeffer identifies the species named *nimbosa* above, with *inconstans* Burm., but it is much smaller and differs in the dentition of the anterior tibiæ; in describing *inconstans*, Burmeister uses this language in referring to the anterior tibiæ: "an den schmäleren Vorderschienen ist keine spur eines dritten Zahnes sichtbar"; in both sexes of *nimbosa* the anterior tibiæ have two teeth on the external margin, apart from the apical process, which ought not really be called a tooth in any instance, the upper very short and obtuse but always observable. It was thought by Mr. Schaeffer that the Arizona species described above under the name *papagoana*,

which, with some of the allied forms, has been called *centralis* since the revision of G. H. Horn (Tr. Am. Ent. Soc., 1884, p. 159), may be an extreme form of *inconstans*; it has however but very little close relationship.

The *undulata—innuba* section is clearly isolated by the glabrous under surface and form of the narrow meso-intercoxal surface, and *innuba** seems to be an exception in the subgenus in having the larger anterior tarsal claw virtually similar and very deeply cleft in both sexes; it was for this reason that I at first expended a good deal of time in trying to separate the sexes of that species. The presence or absence of the small and almost vestigial tooth of the under side of the anterior claw-joint in this *undulata* section, which misled Mr. Blatchley in defining his (*undulata*) *dubia*, is immaterial, or at least of very little service in classification.

Section D (*parvula*).

The species of this section are of small or very moderate size and of a peculiar elongate and slender form, which characters distinguish them very well in the subgenus *Paranomala*, aside from the distinctive maculation of the pronotum. We know at present the following three species:

Clypeus deeply concave, broadly arcuate at apex, with broadly and strongly reflexed margins. Larger than *parvula*, which it otherwise resembles in form, the pronotum with two slightly elongate dark spots at apex, each oblique behind; head black, coarsely, rugosely punctate anteriorly, more finely and sparsely on the occiput; eyes moderately prominent; antennal club slightly longer than the entire stem, pale testaceous; prothorax more than twice as wide as long, the sides arcuate; hind angles rounded, the anterior obtuse; basal bead fine; surface convex, rather sparsely and shallowly punctate; elytra slightly broader at base than the prothorax, convex, the sides nearly parallel, with nine impunctate striæ, the intervals nearly equal, convex, except the second, which is broader and somewhat coarsely

* The description of *Melolontha innuba* given by Fabricius is: "Parva, glabra, nitida. Caput nigrum, ore antennisque flavis. Thorax punctatus, niger, margine laterali testaceo. Elytra substriata, nigra, immaculata. Pectus nigrum. Abdomen testaceum. Pedes nigri, femoribus testaceis. Habitat ——."

The "elytra substriata" doubtless led Burmeister to mistake the species for the smooth *Popillia vidua* Newm., but its true identity has been established by Ohaus from a specimen supposed, at any rate, to be the original type and we may therefore regard its status as finally fixed. The type as described is a very exceptional condition of the species, the entire pronotum being black in the vast majority of examples before me.

punctate in basal half, the punctures finer behind the middle; other intervals uneven and scarcely punctate; color testaceous, with the suture and side margin slightly darker; pygidium moderately coarsely punctate, more densely laterad; under surface and legs testaceous; metasternum clothed not densely with long hairs; abdomen shining, scarcely punctate and with only a few hairs; front tibiæ with a single external tooth and apical process, the inner anterior claw (♂) finely, very unequally cleft, the upper ramus very short and scarcely visible, the intermediate claws entire, not cleft. Length (head porrect), 10 mm. New Mexico.....**antennata** Schf.

Clypeus almost perfectly flat, its edges abruptly but more or less narrowly reflexed.....2

2—Body elongate-oval, convex, shining, pale luteo-flavate above and beneath, the head rufous, the pronotum with the two black spots oblong, extending from the apical margin to basal third, somewhat swollen postero-externally and separated by a parallel pale vitta, the elytra with the sutural interval, and somewhat wider external margin, of a sharply defined black; head densely punctato-rugose, the occiput and clypeal margins with well separated punctures; clypeus fully twice as wide as long, feebly arcuate at apex, with broadly rounded angles, the sides very feebly diverging basally, the reflexed edge very narrow, obsolete basally; eyes (♀) very moderate, the antennal club small, not quite as long as the preceding five joints; prothorax distinctly less than twice as wide as long, the sides very evenly arcuate and moderately converging throughout, the apex deeply sinuate, with right and slightly blunt angles, the basal angles obtuse, moderately rounded; surface convex, finely but distinctly, sparsely punctate, a little more strongly laterad; basal bead very fine, entire, at the foot of a short, rapidly rising convex slope throughout the width; scutellum finely but closely punctate, more sparsely centrally, the black sutural coloration narrowly surrounding it; elytra fully a third longer than wide, not distinctly wider than the prothorax, parallel, with slightly arcuate sides and circularly rounded apex, the striæ feebly impressed, widely and evenly spaced medially and laterally, but with the second and humeral intervals broader and in great part confusedly punctate, especially toward base; strial punctures not very coarse but deep and very distinct: all the intervals nearly flat: pygidium piceous, convex, shining, the arcuate scratches sparse, very short and subpunctiform; sterna with rather long loose pubescence; inner anterior claw (♀) moderately slender, cleft at tip, the upper ramus extending slightly beyond the lower, the same claw of the intermediate tarsi longer and more slender, with the apical notch linearly about half as large. Length (♀) 9.0 mm.; width 4.4 mm. Arizona (Somerton)....**tenera** n. sp.

Body much smaller and still more slender, with still thinner integument, very pale luteo-flavate throughout the body and legs, the head alone pale piceo-rufous, the pronotum with the two small elongate nubilous brown anterior spots, parallel, well separated and occasionally obsolete; head finely, feebly, sparsely and irregularly punctate or feebly rugulose throughout, the clypeus very moderate, short, some-

what more closely punctate and almost evenly semi-elliptical, the edges less narrowly reflexed than in *tenera*, the suture very fine, almost obliterated; eyes (♂) well developed, prominent, separated by twice their width, the antennal club as long as the entire stem; prothorax not quite twice as wide as long, the sides evenly arcuate and but feebly converging throughout; apex very moderately sinuate, the angles sharp, the basal obtuse, rather rounded; basal bead as in the preceding; surface convex, minutely, feebly and sparsely punctate; scutellum much more strongly and closely punctate; elytra cylindric, nearly a third longer than wide, barely wider than the prothorax, rounded posteriorly; surface with evenly spaced and scarcely impressed series of moderate punctures throughout the width, the second interval uniseriately punctate; pygidium shining, the scratches short, extremely feeble and sparse; larger anterior claw (♂) rather slender, very gradually pointed, having above a short and extremely fine ramus, the corresponding claw of the middle tarsi very slender, the apex bifid, the upper process as long as the lower but more slender; sterna with a few fine short hairs, almost glabrous when compared with *tenera*. Length (♂) 7.0–8.0 mm.; width 3.3–3.7 mm. Georgia and Florida. Six examples, the female not at hand.....**parvula** Burm.

Antennata, which is unknown to me, is a rather remarkable exception in the subgenus in having both claws of the intermediate male tarsi simple, and it also differs very much from the other two in the concave clypeus. *Tenera* may be the species identified as *flavilla* Bates, by Mr. Schaeffer, but the careful figure in the Biologia shows that the latter is very much shorter and more oval in form; the prothorax also is very much more transverse and with the form and position of the two spots wholly different.

Group II.

Subgenus **Oliganomala** nov.

The remarkable minute species upon which this subgenus is founded, probably belongs to the West Indian fauna and was described from Florida by Mr. Schwarz under the name *Strigoderma exigua*. There is however no trace of ascending mesosternal epimera and it is in every way, including type of elytral sculpture and general facies, one of the Anomalid series and not a Strigodermid. The ligula is somewhat smaller than usual in *Anomala*, rather broadly truncate at apex, with the middle of the sides much constricted and deeply sinuate over the insertion of the palpi. The labrum is small, very feebly concave medially, shining and has

its posterior exposed limit medially somewht prolonged but broadly and very obtusely so, disappearing under the truncate apex of the ligula; at the sides, the labrum becomes very thin and lamellate. The antennæ have the usual structure; the middle coxæ are so approximate as to be virtually contiguous and the anterior claw-joint is without trace of inferior tooth, being bent at the middle. Other peculiarities will become apparent from the following description of the only known species:

Body oblong, convex, moderately shining, blackish beneath, the upper surface rufo-piceous and the legs testaceous; elytra luteo-flavate, infumate broadly toward the sides and with the three narrow smooth costules on each brighter flavate; head with rather small but strong and well separated punctures throughout, the clypeus deeply concave and almost semi-elliptical; eyes small, not prominent; antennæ blackish, the club (♂) distinctly shorter than the stem; clypeal suture barely traceable; prothorax three-fourths wider than long, the sides very evenly arcuate and but slightly converging throughout; apex rather deeply sinuate, with the bead entire, broad and flat, the angles acute and prominent, the basal slightly obtuse but not rounded; base barely at all lobed, the bead fine, somewhat interrupted at the middle; surface even, convex, finely, subevenly and sparsely punctate throughout; scutellum finely, sparsely and evenly punctate; elytra barely visibly longer than wide and very indistinctly wider than the prothorax, parallel, with feebly arcuate sides, circularly rounded in almost posterior half; surface with three sets of very approximate and rather deep, closely punctate geminate striæ, the inclosed costules relatively narrow and sharply defined also by their paler tint; surface between the exterior of the three and the sides with about three approximate and closely punctate impressed series; second interval coarsely, irregularly, uniseriately punctate, the fourth scarcely punctate, the sixth with few fine punctures; pygidium shining, with rather coarse and anastomosing, moderately strong sculpture; anterior tibiæ not dentate externally, the apical process gradually pointed, scarcely at all everted. Male with the larger anterior claw small, rather stout, abruptly bent basally and somewhat contorted, very unequally bifid, the upper ramus very short and feebly developed though not very slender, the larger middle claw much longer, more slender, moderately cleft at tip; tarsi all notably long and not very slender, the hind tibiæ not stout, slightly constricted apically. Length (♂) 3.9 mm.; width 2.1 mm. Florida (Sumter Co.) [*Strigoderma exigua* Schz.]. . . . **exigua** Schz.

The description is drawn from a specimen kindly lent me by Mr. Schwarz, being one of the three cotypes remaining of the original set. The species has probably never since been taken.

Group III.

Subgenus **Anomalopus** nov.

I have no representative of this subgenus before me and the characters are drawn wholly from published descriptions. The peculiar obconical form of the hind tibiæ and their unusual brevity would seem to show that it is by no means typical *Anomala*. The type is the Mexican *Anomala rhizotrogoides* of Blanchard, with which the following may be associated:

Body larger, stouter and more convex than in *parvula;* head piceous, the front paler; clypeus dark testaceous, coarsely and closely punctate, transverse, broadly rounded at apex and with the edges narrowly reflexed; antennal club (♀) slightly shorter than the preceding five joints; prothorax more than twice as wide as long, the sides narrowing apically from before the middle, nearly straight basally, the hind angles rounded, the anterior not prominent; surface convex, the apical bead nearly obsolete at the middle, the basal distinct; color testaceous, with two oblique dark elongate markings at apex, "on each side of the median line," the markings irregular in outline and slightly curved outward; punctures sparse and not coarse, obsolescent laterally and basally; elytra elongate, parallel, testaceous, the suture and margin dark, the surface sculpture and striæ more or less obscured by transverse rugæ, the striæ laterally more distinct and coarsely punctate; under surface testaceous, shining, the metasternum moderately densely clothed with long pale hairs; abdomen with moderate punctures, not closely placed; anterior tibiæ with a single external tooth, the apical process elongate and slightly curved, the tooth sharp and prominent; larger anterior claw (♀) finely cleft, the two lobes equal in size, the larger claw of the middle tarsi finely cleft, with the two lobes equal; hind tibiæ short, distinctly shorter than the femora, obtriangular, broadly dilated toward apex; pygidium moderately punctate, the punctures not deeply impressed. Length (♀) 10 mm., width 5 mm. Texas. One specimen in the Dietz collection..... **tibialis** Schf.

It is uncertain, from the language used in the original description, whether there are two thoracic spots on each side of the median line or whether it was intended by the author to indicate only one spot at each side; the latter is the more probable.

In the above review of the American species of *Anomala*, the descriptions of *peninsularis*, *antennata*, *clypealis* and *tibialis* of Schaeffer, which are unknown to me in nature, are derived directly from the originals, generally with some alteration, transposition or abbreviation of language for the sake of lucidity, but with careful avoidance of change of meaning or omission of important

characters. Reasons are given for the omission of the Mexican *inconstans* Burm., and *flavilla* Bates, said by Schaeffer to occur within our boundaries, and I have seen nothing resembling *polychalca* Bates, which is also included by the latter author.

Spilota Burm.

Pœcilosticta Kr.

While not differing at all profoundly from the ordinary types of *Anomala*, it is, at any rate, very fortunate to have so valid an excuse for the dismemberment of that overextended genus, as the conspicuous polished intermesocoxal prominence possessed by such species as *marginata* and *lucicola*, and, as before remarked, I can at present find no forms that are strictly intermediate between those species and the *cincta* type of *Anomala* in that respect; again, in addition to this, the basal bead of the pronotum is generally wanting, a character becoming taxonomically very important among the true Rutelids. There is some diversity in the form of the sternal prominence; usually it is a simple smooth anteriorly protuberant tumidity, but in such species as *chrysanthe* and *phosphora* of Bates, it becomes anteriorly prolonged in a gradually attenuated subporrect process. The meso-metasternal suture is sometimes partially traceable. The organs of the mouth and the general structure of the antennæ and tarsi are not recognizably different from the corresponding features in *Anomala*, so far as can be observed. There are at hand four subgeneric groups as follows:

Basal bead of the pronotum completely obsolete as in *Rutela* and allied genera 2
Basal bead present in greater or less degree of development 3
2—Hind tibiæ surate; elytral striation deep and distinct; the pygidium densely sculptured; body larger in size. North and South America. Group I
Hind tibiæ not or scarcely at all surate, parallel-sided; elytral striation very feeble and unimpressed; body of small size. Neotropics. Group II
3—Basal pronotal bead extremely fine and never entire; elytra with the striation distinctly impressed, usually deeply so; pygidial sculpture sparse and scratch-like; body of small size; male much smaller than the female. Nearctic . . . . . Group III
Basal pronotal bead strong and entire; elytra without strongly impressed striæ but with series of irregularly spaced punctures; pygidial sculp-

ture dense and asperulo-rugulose as in Group I; body of unusually large size. Neotropics.....Group IV

This arrangement disposes in a seemingly satisfactory way of all the forms having a tumid mesosternum and non-ascending mes-epimera. But the Mexican *micans* Burm., and *nitidula* Blanch., have also the protuberant mesosternum, with the true Anomalid habitus, and in these there is a slight tendency in the mes-epimera to ascend before the elytral humeri; one of them, *micans*, has a closely and deeply sulcate elytral sculpture, of a form frequently observable in *Strigoderma*, which also has a protuberant mesosternum. We might infer from this that there may be some correlation between ascending mes-epimera and a protuberant mesosternum. Another and still more puzzling species than *micans*, in regard to relationship and also having close-set sulciform elytral striæ, is the Mexican *Anomala hoegei* of Ohaus, but this need not concern us at present, as the intermesocoxal surface is flat and narrow and the mes-epimera do not ascend at all before the humeri.

Group I.

Subgenus **Spilota** in sp.

Besides such Central American forms as *chrysanthe*, *phosphora* and *granulipyga* of Bates, this group will include the two following more boreal species:

Form rather elongate-oval, convex, slightly inflated behind, very shining, blackish-piceous, the under surface, elytra and legs paler and more testaceous, the pronotum pale at the sides, the hind femora blackish at base and apically and also the hind tarsi, all but the more pallid areas having a pronounced greenish-metallic lustre; head well developed, feebly convex, sparsely and moderately punctate, the median parts of the front strongly punctato-rugose and with intermingled fine punctulation, the clypeus coarsely, deeply punctato-rugose, more than twice as wide as long, trapezoidal, with broadly rounded angles, to almost semi-elliptical, having moderately reflexed edges; eyes very moderate in both sexes; antennal club (♂) slightly shorter than the stem, very markedly so (♀); prothorax distinctly less than twice as wide as long, trapezoidal, with feebly arcuate to medially somewhat subprominent sides, the apex sinuate, with prominent angles, which are slightly blunt at apex, the basal angles rounded but not broadly; surface evenly convex, sparsely but strongly punctate, the punctures rather finer and still sparser near the sides; scutellum loosely and rather less strongly punctate; elytra with broad, deeply impressed striæ, in which the strong punctures are so

close-set as to be generally subtransverse, the intervals subequal throughout and very convex, especially laterad, the broader second interval with two irregular sulciform series of punctures, broadly confusedly punctate apically; pygidium with the dense wavy sculpture strong and sybgranuliform; sterna and hind coxæ coarsely, rather closely punctate and with short fine inconspicuous hairs; anterior tibiæ with a single strong obtuse external tooth, the apical process slightly recurved; female generally a little smaller and less stout than the male. Length (♂♀) 12.6–15.0 mm.; width 6.7–8.6 mm. Florida to Missouri and westward at least as far as New Mexico; said by Burmeister to occur also in Mexico, but not so recorded by Bates. [*Melolontha annulata* Germ.]. . **marginata** Fabr.

Form much more abbreviated, the size smaller, the coloration darker, the elytra blackish, with the same strong metallic lustre as the anterior parts, the sterna also blackish; head with the punctures everywhere separated, sparser and smaller basally, the clypeus still shorter, trapezoidal, with broadly rounded angles, with similarly reflexed edges but having the punctures less confluent and, toward the suture, rather widely separated; eyes smaller and even less convex; antennal club (♂) much shorter than the stem; prothorax nearly similar but shorter, twice as wide as long, the apical angles less prominent and more rounded, the basal lobe more truncate; scutellum finely and sparsely punctate; elytra as in *marginata* but shorter, scarcely longer than wide, the two sulci of the second interval more widely separated, the coalescent apical part narrower; pygidium shorter, more convex apically, the sculpture nearly similar; sternal punctures not so coarse and denser, those of the hind coxæ relatively coarser; met-episterna shorter, not over twice as long as wide. Length (♂) 12.5 mm.; width 7.0 mm. Pennsylvania. . . . . **incolumis** n. sp.

The tarsal claws do not differ much sexually in this subgenus; the larger claw of the anterior and middle tarsi is coarsely and deeply cleft at apex, and, in the female, the claw is merely a little longer and more slender and not quite so deeply cleft. One female from Mobile is much stouter than any other of the series at hand and with a larger head, having relatively still smaller eyes, but I can perceive no other differences; it is represented by the larger measurement of width, but not of length, given above.

Group II.

Subgenus **Pachystethus** Blanch.

In general habitus this subgenus departs very markedly from the others, because of the smooth polished integuments, coloration and very much thickened elytral margins basally, as occasionally seen in the female. The type is the *Popillia vidua* of Newman, which

was misidentified by Burmeister as *minuta* Fabr. Because of the striking color variations, Newman also described two synonyms of *vidua*, *Popillia sticticollis* and *semirufa*. It is probable that *Anomala nutans* of Bates, which I have not examined, will enter the subgenus, as well as *crassesculpta* Bates. The following species is altogether distinct from *vidua* and does not seem to have been described hitherto:

Form oblong, rather depressed, highly polished, wholly black to entirely red-brown, excepting two pronotal black spots; the sterna of the hind body are, however, always black or blackish; legs pale in the pallid examples, excepting more or less of the hind tibiæ and the hind tarsi, which are always black as in *vidua;* head very densely punctato-rugulose throughout, except at base, where the punctures are small and sparse; clypeus flat, trapezoidal, with broadly rounded angles and moderately reflexed edges; eyes small, not prominent; antennal club always black, shorter than the stem; prothorax about three-fourths wider than long, trapezoidal, the sides straight, arcuately bending at the middle; apex deeply sinuate, with sharp advanced angles, the basal angles more than right but only with their apices slightly blunt; surface moderately convex, very minutely and remotely punctulate, the punctures small but distinct near the sides; scutellum minutely, remotely punctulate; elytra oblong, with parallel and feebly arcuate sides, barely visibly longer than wide, rapidly very obtusely rounded at apex; surface smooth, with scarcely at all impressed series of very small punctures, the second interval wide, irregularly and finely, subbiseriately punctulate along the middle, the third smooth and feebly costuliform, the others all nearly flat; lateral series more strongly punctate; pygidium with the short arcuate lines very deep, sparse and punctiform; metasternum strongly, rather loosely, the hind coxæ coarsely and sparsely, punctate. Length (♀) 8.4–9.0 mm.; width 4.9–5.2 mm. Colombia. Three examples.

***puncticeps** n. sp.

The larger claw of the anterior tarsi is not very stout and is rather deeply cleft at tip, the lobes of equal length, the upper barely thinner than the lower. I think that they are all females, but the outer margin of the elytra is very thin, the marginal surface less concave basally but without thickened beading. One of the specimens is deep black throughout, one pale, excepting the black post-sterna, hind tarsi, pygidium and pronotum except at the sides and with black head and paler clypeus; the third is completely pale, excepting the blackish post-sterna, black hind tarsi and two elongate black pronotal spots. Of my two males of *vidua*, one is completely deep black throughout, the other bright testaceous throughout

beneath, on the apical half of the head and at the sides and narrowly along the middle of the pronotum, the tarsi all black, the elytral margin thickened near the base; the female is much larger, more rhomboidal, with very thick elytral margins, becoming very thin posteriorly; it is wholly testaceous, excepting the tarsi and two well separated pronotal black spots. These observations seem to confirm, in general, the opinion of Mr. Arrow (Tr. Ent. Soc. Lond., 1899, p. 260), that the coloration in *vidua* is of a sexual nature, as stated by Burmeister but denied by Bates, but is not so confirmatory in regard to *puncticeps*, where the color may be either deep black or almost entirely pale within what seems to be the same sex.

Group III.

Subgenus **Hemispilota** nov.

The body is here much less shining as a rule than in either of the preceding and is more convex and more deeply sculptured than in *Pachystethus*. In its typical forms it is a boreal group and does not seem to occur south of the Mexican boundary, except in the aberrant *Anomala nitidula* and *micans* of Mexico and Central America. The three American forms in my collection, one of which may be regarded as subspecific, may be described as follows:

Elytral punctures moderate, the striæ only moderately impressed; thoracic punctures generally less close-set; lustre never metallic at any part. Body (♀) stouter, convex, shining, pale brownish-flavate in color throughout above and beneath, excepting occasionally two oblique black thoracic spots, or (♂) of a slightly less clear tint, with the post-sterna blackish, the pronotum invariably black, pale at the sides and irregularly along the median parts of the base, the black area sometimes much retracted from the base and bifurcate, or with the entire body deep black; head irregularly punctulate, densely anteriorly; clypeus large, very transverse, roundly trapezoidal, the edges very moderately reflexed; eyes small, not prominent; antennal club (♂) always dark, as long as the stem, or (♀) distinctly shorter; prothorax nearly twice as wide as long in the female, much less in the male, trapezoidal, with almost evenly arcuate sides, deeply sinuate at apex, the fine basal bead only traceable for a short distance sublaterally; surface convex, somewhat uneven, with rather small but deep and sparse impressed punctures, slightly stronger laterad; scutellum unusually short, with small sparse punctures; elytra barely as long as wide, slightly inflated, obtusely rounded behind, the side margins somewhat thickened and uneven basally, but little more evidently in the female; striæ rather

well impressed, coarser laterad, the second interval strongly and confusedly punctate, the fourth uniserially, 3–5–7 more strongly convex, smooth; pygidium with well separated and superficial anastomosing arcuate scratches, a little stronger in the male. Male with the larger anterior claw stout, deeply cleft, the upper ramus slender, not quite as long as the lower and very much thinner; female with the same claw much more slender, arcuate, deeply cleft at apex, the lobes of equal length and subequal in thickness. Length (♂) 7.5–8.9, (♀) 7.8–9.8 mm.; width (♂) 4.3–4.9, (♀) 4.6–5.8 mm. Rhode Island to Kansas. Abundant. [*Melolontha mœrens* and *atrata* Fabr., and *pinicola* Mels.]..... **lucicola** Fabr.

Elytral punctures coarser, the striæ deeper and more sulciform, the body narrower in form, the lustre more or less evidently metallic, except on the elytra and under surface. Form elongate-oval, strongly convex; male much smaller than the female and dark red-brown in color, most of the head and the pronotum, except at the sides, black, the female more pallid in color, the pronotum pale, generally more or less mottled with a metallic blackish tint; head rather large, in great part punctato-scabrous, the eyes small, the clypeus very short and transverse, unusually truncate at apex, the angles moderately rounded, the edges abruptly and distinctly reflexed; antennal club (♂) distinctly, or (♀) very much, shorter than the stem; prothorax (♂) nearly twice as wide as long, or (♀) larger and very much less transverse, in form nearly as in the preceding but with less rounded sides, the surface shining but more uneven and with coarser, deeper and more approximate punctures, the vestiges of the basal beading similar; scutellum less abbreviated, punctured like the pronotum; elytra with the striæ coarser, deeper, more regularly and closely spaced in the male than in the female, the costuliform intervals 3–5–7–9 more evidently differentiated in the latter sex, where the sculpture is nearly as in *lucicola;* in the male it is quite different, the punctures of the second interval not being moderate and widely diffused but lying within two feeble unequal sulci, which coalesce and form a single large deep sulcus posteriorly; pygidium shining, with well separated superficial anastomosing scratches in both sexes. Male with the larger anterior claw nearly as in *lucicola*, except that the upper ramus is smaller, much shorter and still finer; female with the same claw long, slender, the apex not deeply cleft, the upper lobe a little shorter and distinctly thinner than the lower. Length (♂) 7.7–8.6, (♀) 8.5–10.5 mm.; width (♂) 4.4–4.8, (♀) 4.7–5.5 mm. North Carolina (Southern Pines),—Manee. Eight examples. [*Anomala oblivia* Horn.]..... **oblivia** Horn

A—Similar to *oblivia* but smaller in both sexes, the latter however bearing to each other the same relationship in size and coloration; head distinctly smaller in both sexes but otherwise similar; antennal club (♂) very nearly as long as the stem, or (♀) much shorter; prothorax of the male much less transverse, less transverse than in the female, the punctures strong and deep, still closer in both sexes than in *oblivia;* elytra nearly similar in sculpture in the two sexes and as in the female of *oblivia;* pygidium nearly

similar; tarsal claws nearly as in *oblivia*, except that the upper ramus in the female is relatively shorter and more slender. Length (♂) 7.0–8.0, (♀) 8.2–9.2 mm.; width (♂) 3.7–4.7, (♀) 4.2–5.3 mm. New Jersey (seashore at Atlantic City). Very abundant.....**maritima** n. subsp.

As intimated above, the Central American *Anomala nitidula* of Blanchard, may be regarded as a member of this subgenus and has the basal thoracic beading similarly fine, fragmentary and vestigial, but the elytral striæ are much more feebly impressed and the anterior edge of the clypeus, viewed anteriorly, is thinner, convex and does not have the flattened inferiorly acutely margined form prevailing in the northern species, which resemble the true *Spilota* and some of the true *Anomalæ* in this respect. The hairs of the under surface in *nitidula* are longer and more conspicuous, and the larger anterior claw in my two specimens, which are apparently female, is rather stout, coarsely cleft nearly to the middle, with the upper lobe a little longer than the lower though subequal to it in thickness. There is only a slight tendency in the mes-epimera to ascend before the elytral humeri, and this peculiarity is not sufficiently developed to ally the species in any way closely with the Strigodermids, especially in view of its very different and purely Spilotid facies. It is my conviction that the aberrant Mexican *micans* of Burmeister, can also enter this subgenus very well, with the same statement in regard to the mes-epimera as in the case of *nitidula;* in general habitus it agrees very well, except that the elytral sulci are deeper, closer and more even, and that there is no trace of a basal thoracic bead.

Group IV.

Subgenus **Zaspilota** nov.

Of this subgenus there are at hand two individuals, one a male, with the larger anterior claw stout, deeply bifid, the upper lobe moderately slender, aciculate, continuing the direction of the upper margin of the claw, while the lower is much thicker, rapidly deflexed, becoming rapidly acute at tip and a little longer than the upper, so that the two rami diverge more than in some other forms of the claw. The other is a female, having the corresponding claw longer, more slender and more symmetrically and almost as deeply cleft at apex. The male has the head and eyes relatively much less

developed than in the larger female, and they therefore represent two species, the male being the true *Anomala cupricollis* Chev., and the female the form called *coagulata* by Bates, although the elytra exhibit but few cloud-like spots, except about the external edges of the elytra. Some other of the large Central American species, such as *Anomala megalia* and *præcellens* of Bates, will also enter the subgenus in all probability.

Lamoana n. gen.

The type of this genus and the only species known to me, is the aberrant Mexican *Anomala villosella* of Blanchard, a specimen of which taken by Wickham at Pte. de Ixtla, Morelos, is now at hand. In the slender ascending mes-epimera, it is allied to the Strigodermids. The mesosternum between the coxæ does not have the protuberant form seen in either *Spilota* or *Strigoderma*, being simply rather wide and unusually convex, with the suture separating it from the hairy metasternum distinct. It is peculiar in its pubescent surface throughout above and beneath, the pubescence of the elytra being an especially aberrant character in this part of the series. The body is almost evenly oval and convex, the entire head and pronotum not coarsely but deeply, evenly and very densely punctate, the pronotum with a very fine basal bead, obsolete medially, less than a third wider than long, with the sides almost evenly rounded and moderately converging from base to apex, the latter deeply sinuate. The punctate elytral striæ are subequal and very close-set as in *Strigoderma*, but they are much more shallow and the second interval has the punctures very confused but only narrowly along its axial line. The convex shining pygidium has long, coarse silky pubescence and is feebly sculptured. The larger anterior claw in the male is stout, arcuate and gradually obliquely pointed; on its upper surface there is, at a point but little beyond the middle, a very short and almost bristle-like process, diverging from the claw so slightly that the cleft is barely visible. The hind tibiæ are but very slightly surate. The body is about 8.5 mm. in length.

Strigoderma Burm.

This genus is exclusively North and South American and includes many species. I have assumed the Mexican *Strigoderma*

sulcipennis Burm., as its type, for, as organized at present, it has a number of discrepant elements, one of which is here removed under the name *Strigodermella*. One of the chief peculiarities of the genus, in the assumed typical form, is the closely and very regularly sulcate elytral sculpture. The mes-epimera arise in rather tumid outline before the elytral humeri and the mesosternum is tuberculiform between the coxæ. In the male the larger anterior claw is almost exactly as in *Lamoana*, described above, the very short appendage of its upper surface scarcely diverging and so thin as to be almost bristle-like; in the female the same claw is longer, more slender, parallel, feebly arcuate and very moderately and almost symmetrically cleft at tip. The female is generally very much more abundant than the male. The species in my collection may be arranged as follows, the characters in every instance being drawn from the female, except in the case of *viridicollis* Schf., where the only specimen is a male; they are all of the *sulcipennis* and *arboricola* types, having the elytra evenly and closely sulcate throughout the width, and are numerous in Mexico, but were all included under the name *sulcipennis* by Mr. Bates:

Lateral oblique impressions of the pronotum very deep and fossulate; pygidium with sculpture of subrectilinear transverse interlacing lines, generally deep and conspicuous. Southern Arizona to Central America 2

Lateral impressions feebler to almost completely obsolete; pygidium with feebler and more superficial sculpture, consisting of transversely wavy anastomosing lines; basal bead of the pronotum fine but always entire. Nearctic regions 8

2—Head finely and sparsely punctate basally. Body elongate-subrhombiform, polished and intense black throughout, without trace of metallic lustre at any part; head three-fifths as wide as the prothorax, strongly but not coarsely or very densely, irregularly punctate, sparsely and finely so behind the line of the eyes, which are not at all prominent and with unusually large and high anterior canthus; clypeus twice as wide as long, almost parallel, rectilinearly truncate and with very moderately rounded angles, the surface broadly indefinitely impressed peripherally, the edges only very slightly reflexed; antennal club rather longer than the preceding five joints; prothorax very nearly as long as wide, the feebly converging and nearly straight sides slightly subprominent before the middle, the acute apical angles much advanced; basal bead strong but widely and completely interrupted medially; surface smooth, minutely, sparsely punctate laterad, the oblique lateral fossæ large and deep, the intermediate rounded and external, the space between the two

fossæ deeply rugose; median fossa deep, broadly impressed, acute along the bottom and extending from apex nearly to the base; scutellum impressed and rugulose along the middle, elsewhere sculptureless; elytra fully a fourth longer than wide and more than three-fourths wider than the prothorax, cuneiform, the lateral edge and next costa inflated basally, the humeri much exposed basally, rounded, tumid and polished, the costæ strong, smooth, about thirteen in number, the intervals sulciform and equal to the costæ, only very minutely, transversely marked at the bottom; pygidium having unusually little slope, convex, very tumid at tip, the apex rapidly and deeply convex to the lower margin, the transverse scratches rather coarse, deep and interlacing but not very close; anterior tibiæ with the external tooth obtuse but rather large, the posterior longer than the femora or tarsi, almost evenly, gradually thickened from base to apex. Length (♀) 13.5 mm.; width 6.3 mm. Honduras (San Pedro Sula).....*aterrima n. sp.

Head coarsely and closely punctate near the base as usual and densely and more or less coarsely punctato-rugulose throughout elsewhere, the eyes similarly small and not in the least prominent, but with smaller and less elevated anterior canthus, the clypeus always trapezoidal, with less parallel sides and more broadly rounded angles; short transverse lines at the bottom of the elytral sulci confused and indefinite in *pimalis* and *prolixella*.....3

3—Pygidium moderately sloping, at an angle of about 45°.....4

Pygidium much more nearly vertical.....6

4—Scutellum closely and rather strongly punctate; prothorax shorter, transverse. Body subrhombiform, shining, black, the head near the eyes and the sides of the pronotum bright metallic cupreous to green; elytra pale, with black ridges; legs black, the hind femora opalescent, testaceous, black beneath; head moderate, the clypeus barely twice as wide as long, almost semi-elliptical, the surface flat, the edges throughout moderately though distinctly reflexed; prothorax two-fifths wider than long, the apical angles prominent and acute, the basal broadly rounded; basal bead entire but finer medially; surface sparsely and moderately punctate anteriorly and laterally; punctures fine, very feeble and sparse elsewhere, the median sulcus obsolescent near the apex and gradually toward base, the two lateral fossæ deep and large, the intermediate external impression not distinct; elytra slightly elongate and moderately cuneiform, the ridges equal and rather sharply convex, the sulci very distinctly, transversely lineate at the bottom, becoming unusually distinctly punctate laterad, the outer margin very moderately thickened basally; pygidium with the transverse interlacing lines unusually close-set, in profile rapidly descending to the lower margin apically; external tooth of the anterior tibiæ extremely feeble and obtuse and at a much greater distance from the apex than in the preceding, the hind tibiæ similar in shape but not so long or thick, barely at all longer than the femora. Length (♀) 10.4 mm.; width 4.4 mm. Mexico (Cuernavaca, Morelos),—Wickham.

*mediocris n. sp.

Scutellum more or less sparsely punctate, the prothorax almost as long as wide.....5

5—Form more abbreviated and rhombiform, shining, the type dark testaceous throughout, the elytra rather more pallid, the head and pronotum with feeble violaceous lustre, the latter blackish along the sulcus; legs pale, the hind tarsi blackish, the hind femora more flavate; head scarcely half as wide as the prothorax, unusually coarsely and deeply punctato-rugose, the sculpture abruptly subobsolete near the eyes; clypeus moderately reflexed and submetallic peripherally; antennæ black, the club not as long as the five preceding joints; prothorax a fifth or sixth wider than long, the sides feebly subprominent near the apex, the basal angles moderately rounded, the apical blunt at tip; basal bead strong, very narrowly interrupted at the middle; surface deeply sulcate medially from apex nearly to the base, moderately and rather sparsely punctate, more strongly laterad, the oblique fossæ strong, the surface between them rugose, the external pit distinct; scutellum sparsely and unevenly but distinctly punctate, the sulcus wanting except postmedially; elytra barely longer than wide, rather less than one-half wider than the prothorax, unusually rapidly narrowing and with arcuate sides from base to apex, the lateral edge and next ridge swollen basally; ridges equal discally, the sulci with distinct transverse lines across the bottom; pygidium in profile evenly sloping, becoming vertical at tip through an unusually short distance or feebly pointedly tumid only very near the apex, the surface very shining, glabrous, the transverse sculpture shallow, rather fine and much less close-set than in the preceding. Length (♀) 12.0 mm.; width 5.3 mm. Nicaragua (Omitepe),—Shimek. ***convergens** n. sp.

Form more oblong-oval, shining, deep black, the legs partially rufescent, the hind femora pale on the upper margin and in a slender lateral streak basally; head feebly metallic, slightly pallescent anteriorly; pronotum deep black, without trace of metallic lustre, the elytra wholly pale yellow-brown; head feebly convex, discretely punctate basally, the clypeus less than twice as wide as long, trapezoidal, with rounded angles and very feebly reflexed edges; antennal club oval, a little longer than the five preceding joints; prothorax very nearly as long as wide, the sides almost evenly, feebly arcuate, the prominent apical angles but finely blunt at tip, the basal broadly rounded, the basal bead strong, widely and completely effaced medially; surface smooth, with rather close moderate punctures at the apical margin, a little coarser at the sides, elsewhere subobsolete, the fossæ large, deep and smooth, the external pit confluent with the posterior fossa; scutellum with a shallow rugulose sulcus, elsewhere minutely, very sparsely punctate; elytra large, a third longer than wide, gradually moderately cuneiform, with broadly arcuate sides, the edge thickened basally, not quite one-half wider than the prothorax, very evenly costate and sulcate, the transverse lines at the bottom of the sulci very even and distinct; pygidium shining, the transverse lines straight, very deep, rather coarse, moderately separated and not interlacing, the erect pale hairs stiff and sparse;

apex conically prominent in profile; tooth of the anterior tibiæ obtuse but very distinct; hind tibiæ distinctly longer than the femora or tarsi. Length (♀) 12.3 mm.; width 5.7 mm. Mexico (Pte. de Ixtla, Morelos),—Wickham.....*morelosana n. sp.

6—Basal bead of the pronotum completely and moderately widely effaced at the middle. Body deep shining black, without metallic lustre, the pronotum blue-black, the elytral sulci pale at the bottom, the very uniform costæ deep black and polished; legs deep black, the hind femora flavate, black in less than lower half; head nearly as in the preceding but a little smaller, barely half as wide as the prothorax, the clypeus black, relatively larger, with rather less rounded angles, the edges similarly very moderately reflexed; antennal club shorter, more oval and distinctly shorter than the preceding five joints; prothorax but little shorter than wide, the feebly arcuate sides becoming slightly sinuate apically, where the angles are very acute and prominent, the basal very obtuse and rounded; surface medially sulcate as in the preceding, but with the sulcus attaining basal sixth; in the type of *morelosana* it abruptly terminates a little behind the middle and thence to the base is continued by a fine incised line; lateral fossæ as in the preceding but with the intervening ridge very rugose; punctures stronger and much more numerous, small, feeble and sparse medially, rather coarse and close laterally; scutellum with rather small but deep, sparse punctures, the sulcus obliterated before the middle; elytra nearly as in the preceding; pygidium much more arcuate and more deflexed in profile, very obtusely tumid apically, shining, with shorter and still sparser erect pale hairs, the sculpture much more feeble, the lines well separated, more interlacing than in *morelosana;* anterior tibiæ with the external tooth small but distinct, triangular; hind tibiæ still longer. Length (♀) 11.8 mm.; width 6.2 mm. Mexico (Rio Balsas, Guerrero),—Wickham.....*radula n. sp.

Basal bead of the pronotum finer but entire, not at all interrupted medially.....7

7—Form decidedly stout, black, the met-episterna and hind femora pallid and with opalescent metallic lustre, the latter black along the lower edge; head and pronotum black, with strong metallic lustre, the latter more or less pale and with brighter lustre laterally; elytra pale, with the ridges black; head half as wide as the prothorax, coarsely and rather loosely punctato-rugose, the clypeus trapezoidal, with moderately rounded angles and with the edges throughout abruptly and rather strongly reflexed; antennal club fully as long as the five preceding joints; ligula shining and perfectly flat; prothorax rather small, slightly shorter than wide, the sides parallel and feebly arcuate in basal two-thirds, then converging and straight or feebly sinuate to the very acute and prominent apical angles, the basal moderately rounded; surface rather coarsely, not very closely punctate, more finely and sparsely medially, except apically, the sulcus extending from apex to well behind the middle, the lateral fossæ deep but smaller and shorter than in any of the preceding species, the sublateral pit rounded and isolated; pubescence long, sparse and erect,

distinct; scutellum sparsely punctate, not sulcate; elytra a fourth longer than wide and fully two-thirds wider than the prothorax, feebly cuneiform, with arcuate sides, the edge only slightly thickened basally, the humeri widely exposed, tumid and shining; costæ subeven throughout, barely as wide as the deep sulci, the sculpture of the latter feeble and confused; pygidium feebly, circularly tumid at apex, moderately convex, with short sparse stiff hairs, the transverse sculpture rather fine and shallow, somewhat close, conspicuously interlacing; tooth of the anterior tibiæ small and obtuse; hind tibiæ barely longer than the femora. Length (♀) 11.5 mm.; width 5.8 mm. Southern Arizona.....**pimalis** Csy.

A—Nearly similar in habitus and coloration but not so stout and with relatively larger prothorax; head nearly similar but with the antennal club smaller, distinctly shorter than the preceding five joints; ligula deeply concave longitudinally, the bottom of the concavity more or less acute; prothorax nearly similar but with the sides more evenly arcuate, becoming gradually more converging before the middle; scutellum narrower, more elongate; elytra nearly similar in general character but relatively longer and narrower, not one-half wider than the prothorax, the sulcus from the humeral callus to the apex—the eighth from the suture—largely and irregularly interrupted by transverse rugæ in the type; pygidium gradually more obtusely tumid apically and with the transverse interlacing sculpture much coarser, closer and deeper, the short erect hairs more numerous; tibiæ nearly similar; metepisterna not paler but bright metallic green. One example has the pronotum wholly pale, with bright testaceo-aureous lustre. Length (♀) 11.2–11.5 mm.; width 5.2–5.6 mm. Southern Arizona. Four examples.....**prolixella** n. subsp.

Form much narrower and relatively more evenly oval, shining, pale testaceous throughout, the head and pronotum with feeble greenish or violaceous surface lustre, the hind femora opalescent; head slightly more than half as wide as the prothorax, very densely and strongly punctato-rugulose, more discretely punctate basally; clypeus twice as wide as long, with more broadly rounded angles; antennal club barely shorter than the five preceding joints; prothorax differing distinctly in outline, fully a fifth wider than long, the sides subparallel and very evenly, strongly arcuate throughout, gradually a little more converging apically, the apical angles prominent and very acute, the basal rounded; median lobe of the base relatively much wider than in the two preceding; surface sparsely punctate, more coarsely but shallowly laterally, the median sulcus shallow, extending from near the apex to a little behind the middle; oblique lateral fossæ less deep than in any of the preceding, the sublateral pit isolated; scutellum rather wider than long, sharply cordiform, finely, sparsely punctate and not sulcate; elytra about a fourth longer than wide, almost parallel, the sides feebly arcuate and but slightly converging, more abruptly and broadly obtuse at the bilobate apex than usual, the lateral edge thickened basally, two-fifths wider than the prothorax, the ridges even throughout, rather nar-

rower than the deep sulci, the bottoms of which are crossed by regular transverse lines; pygidium evenly convex, not gradually more tumid apically, shining, having very short sparse stiff hairs, the transverse lines moderately close, nearly straight, shorter, coarser and deeper than in the preceding and not interlacing; tooth of the anterior tibiæ short and broadly obtuse. Length (♀) 10.7 mm.; width 5.1 mm. Southern Arizona. A single example.....**subrutilans** n. sp.

8—Elytral ridges of equal elevation throughout the width as in the preceding section.....9

Elytral ridges unequal in prominence, the fourth and eighth evidently more elevated; body narrow and elongate-oval, frequently of rather small size.....11

9—Fourth ridge from the suture about twice as wide as any of the others; body very stout, black, shining, the abdomen piceous; hind femora pallid and opalescent on the upper side; pronotum with metallic lustre, the head and scutellum without such lustre, the elytra dark brownish-flavate, a few of the lateral ridges darker, the pygidium rufescent basally; head fully half as wide as the prothorax, coarsely, very densely punctato-rugose and dull, the clypeus large, trapezoidal, with broadly rounded angles, the edges broadly but very moderately reflexed; antennal club a little shorter than the preceding five joints; occiput at base greenish in lustre; prothorax large, trapezoidal, one-half wider than long, the sides nearly straight, feebly subprominent near apical third, the prominent apical angles slightly blunt at apex, the basal rounded; surface very shining, strongly punctate, coarsely and rather closely toward the sides, sparsely and more feebly medially, the sulcus narrow and barely traceable in about apical half, the lateral fossæ obsolete or barely traceable; pubescence coarse, sparse and erect; basal bead almost obsolete at the middle; scutellum densely punctato-rugulose and dull, shining and smooth at the edges; elytra barely a third wider than the prothorax, a fourth longer than wide, feebly cuneiform, with broadly rounded sides, the lateral edge much thickened basally in a vertical sense only; fourth costa coarsely and confusedly punctate, except basally; pygidium feebly convex, tumid medially near the apex, the fine interlacing lines widely separated anteriorly, close apically, the erect hairs rather numerous and not very coarse; tooth of the anterior tibiæ strong and triangular; hind tibiæ equal in length to the femora. Length (♀) 12.3 mm.; width 6.4 mm. Kansas.....**obesula** n. sp.

A—Somewhat similar to the preceding and with black under surface, but with the legs and pygidium very pale in color throughout, the hind femora infumate on the lower edge; head nearly similar but smaller, black, the clypeus with less broadly rounded angles, the suture similarly distinct; prothorax pale, with a large blackish discal area distant from the base, otherwise nearly similar and with obsolete impressions, the basal bead distinct medially and the sides at apical third much more prominent; scutellum nearly similar, less transverse, not quite so densely scabrous; elytra wholly very pale in color, but little longer than wide, more narrowed posteriorly and with the wide fourth costa very smooth and

polished throughout, without trace of the very coarse close sculpture seen in *obesula;* pygidium feebly but more evenly convex and with the subapical prominence very feeble and obtuse. Length (♀) 10.8 mm.; width 5.6 mm. Kansas.... **quarternaria** n. subsp.

Fourth elytral ridge not differing from the others..... 10

10—Body larger in size and generally dark in color. Black throughout, the pronotum with feeble paler tints laterally, the bottoms of the elytral sulci pale and the hind femora flavescent to wholly dark red-brown above, black beneath, with entirely pale legs, excepting the lower edge of the hind femora, the met-episterna always pallescent and submetallic, the pronotum brightly metallic toward the sides, this pale area gradually contracting to the middle of the base; head black and dull, densely sculptured, greenish at base, the clypeus nearly as in *obesula;* prothorax large, trapezoidal, one-half wider than long, smooth and very shining, the punctures everywhere very sparse and not coarse, sometimes a little closer near the sides, the basal bead always entire; median sulcus fine and very feeble, obsolete basally, the lateral fossæ rather deep and distinct but much smaller in size than in the first section of the genus, the deep rounded sublateral pit widely isolated; scutellum irregularly and in part densely punctate, the punctures shallow, almost punctureless toward base; elytra notably elongate, two-fifths longer than wide, not quite one-half wider than the prothorax, feebly cuneiform, with arcuate sides, the edge vertically expanded basally; transverse lines at the bottom of the sulci rather feebly defined; pygidium almost evenly, feebly convex, shining, not tumid near the apex, the transverse irregular sculpture not dense and less interlacing than in the preceding; anterior tibiæ with the tooth at about the base of the apical process. Length (♀) 10.8–11.8 mm.; width 5.4–5.8 mm. Texas. Six examples..... **texana** n. sp.

Body smaller but almost similarly stout in form. Black, the met-episterna pallescent, the hind femora with a large apical spot toward the upper side pale; pronotum metallic and sometimes pale laterally; head nearly as in the preceding but more shining; prothorax generally rather less than one-half wider than long, trapezoidal, the sides feebly prominent near apical third, thence straight to very feebly sinuate to the acute tip of the prominent apical angles, the basal moderately rounded; surface variably, generally rather strongly but not densely punctate, the sulcus very feeble, obsolete at apex and basally, the lateral fossæ usually evident though small and shallow; scutellum discretely though closely and shallowly punctate; elytra much shorter than in *texana*, about a fourth longer than wide, rather distinctly tapering, with arcuate sides, always pale tawny-flavate in color; pygidium with the transverse interlacing sculpture rather strong and somewhat close-set throughout, distinctly tumid medially near the apex. Male smaller and slightly narrower than the female, the elytra frequently infumate laterally, the pronotum more closely and conspicuously punctate though similarly metallic near the sides and with the erect stiff pubescence closer; pygidium similar. Length (♂) 8.0–10.0 (♀) 9.2–11.0 mm.; width (♂) 3.8–4.8, (♀) 5.0–5.8 mm.

New Jersey and Canada to Kansas. Very abundant, the males between a third and half as numerous as the females. [*Melolontha arboricola* Fabr.]..... **arboricola** Fabr.

A—Similar but a little smaller and rather notably less stout, especially in the female, similar in coloration and with the prothorax of the female nearly similar, being moderately pubescent, shining between the punctures and metallic laterally, but differing very much in the pronotum of the male, which is entirely black, without metallic lustre and with the erect pubescence longer, paler and much denser, being very conspicuous; in both sexes the pygidium differs in being duller, more closely sculptured, more pubescent and with the subapical tumidity very much more obtuse and indistinct. Length (♂) 9.0–9.2, (♀) 9.0–10.5 mm.; width (♂) 4.5, (♀) 4.2–5.0 mm. Rhode Island (Watch Hill). Three males and seven females..... **puritana** n. subsp.

B—Nearly similar to *arboricola* but a little smaller and more oblong, the elytra being almost parallel, the pygidium nearly similar and with distinct subapical tumidity, but more angulate at apex; prothorax more densely sculptured in the male but with the erect pubescence nearly similar and not so dense or conspicuous as in *puritana;* female dimorphic in color, entirely pale or black, in the latter case having the pronotum pale at the sides, but the summits of all the elytral ridges are black. Length (♂) 9.0, (♀) 7.8–9.2 mm.; width (♂) 4.2, (♀) 3.9–5.0 mm. Virginia (Nelson Co.). One male and seven pale and seven dark females. **virginica** n. subsp.

C—General outline as in *arboricola* but shorter and much smaller, similar in coloration, except that the elytra are rather paler flavate; head and prothorax nearly similar, the sparse punctures of the latter rather smaller and feebler and the lateral fossæ somewhat feebler, in fact almost vestigial; elytra differing greatly, barely at all longer than wide and more feebly cuneiform, irregular in sculpture, the fourth and eighth ridges slightly wider, the eighth with a single series of coarse punctures, space between the first and fourth ridges with two fine ridges, separated by a row of large and deep, impressed punctures; pygidium closely and intricately transverso-lineate, the subapical tumidity less distinctly defined; antennal club very small, barely twice as long as thick, oval. Length (♀) 8.2 mm.; width 4.8 mm. New Jersey. One specimen. **irregularis** n. subsp.

Body in form as in *arboricola*. Head, pronotum and scutellum bright green, the second with pale side margins, the legs pale, with greenish lustre, the front and middle femora entirely, and the lower half of the hind femora, of a bluish black; body pale testaceous, the under surface black, the pygidium, tarsi and upper half of the hind femora testaceous, with greenish lustre; elytra pale, the suture greenish, the lateral costæ piceous; head coarsely and densely punctate, the clypeal suture obliterated, the edges moderately reflexed; prothorax not quite twice as wide as long, the sides feebly arcuate; apical angles subacute, the basal rounded; surface coarsely punctate, densely

laterad, slightly more sparsely medially, with a few intermingled finer punctures; pubescence moderately long, erect; median sulcus impressed but not attaining base or apex, the lateral fossæ distinct; scutellum irregularly punctate, the punctures finer than those of the pronotum; elytra one-half longer than wide, feebly and arcuately narrowing posteriorly, the surface striato-sulcate, the punctures of the sulci large and shallow; intervals very convex, as wide as the striæ; pygidium transversely rugose, sparsely hairy. Length (♂) 9 mm. New Mexico..... **viridicollis** Schf.

Body much more slender and elongate-oval than in *arboricola*. Color black above and beneath, the pronotum broadly feebly pallescent laterally, the pygidium piceous; legs dark piceo-rufous, the hind femora uniform in color and but slightly less dark, though with a somewhat violaceous lustre; pronotum feebly metallic; head nearly as in *arboricola* but with the eyes much more convex and prominent than in any of the preceding forms, separated by barely five times their width; antennal club small; prothorax barely two-thirds wider than the head and but very little wider than long, the sides parallel and nearly straight in basal three-fifths, thence converging to the slightly blunt but prominent apical angles, the basal moderately rounded; basal bead entire; surface smooth, very shining, sparsely and finely punctate, the median sulcus and lateral oblique fossæ obsolete; pubescence sparse, coarse and erect; scutellum rather short, more closely and more strongly punctate than the pronotum; elytra two-fifths longer than wide, subparallel, the sides broadly arcuato-convergent in posterior half, evenly very pale in color, the sulci even but rather less deep and more strongly punctured than usual, the costæ about equal to the sulci, except the eighth and ninth, which are united and bear a series of coarse deep punctures; second sulcus from the lateral margin very coarse and deep, divided posteriorly by the usual narrow ridge; pygidial sculpture fine, rather close and shallow, transversely intricate, the subapical tumidity obtuse; tooth of the anterior tibiæ broad but short and very obtuse; hind tibiæ a little longer than the femora. Length (♀) 9.0 mm.; width 4.0 mm. A single example unlabeled in the Levette collection. **angustula** n. sp.

11—Form narrowly elongate-oval, rather shining, deep black beneath, the pygidium blue-black; legs and tarsi black, the upper half of the hind femora flavate; head basally and the pronotum with strong greenish lustre, the latter testaceous at the sides, narrowly so toward base; scutellum black, without metallic lustre; elytra flavate-brown, all the costæ black, pale basally; head and eyes nearly as in *arboricola*, the edges of the clypeus broadly but extremely feebly reflexed; antennal club deep shining black, fully as long as the preceding five joints; prothorax transverse, fully one-half wider than long, the sides evenly and broadly arcuate, but slightly more converging apically, the prominent apical angles rather sharply defined, the basal rounded, the basal bead sharp and entire; surface with moderate but deep sparse punctures, becoming coarse and close laterad, the sulcus shallow, not complete, the oblique lateral fossæ evident

but not deep, the lateral pit isolated; pubescence wanting in the type; scutellum finely, sparsely punctate; elytra fully two-fifths longer than wide, two-fifths wider than the prothorax, feebly cuneiform, with broadly arcuate sides, the edge sinuate slightly behind the base; costæ 2–3–5–6–8 and 9 much finer than the sulci and smaller and less elevated than 4 and 7, the punctures coarse but shallow and not well defined; pygidium with rather close and fine, transversely interlacing lines, moderately tumid subapically; tooth of the anterior tibiæ near the base of the process, very short and broad and so obtuse as to be virtually rounded; hind legs long. Length (♂) 10.0 mm.; width 4.7 mm. Mexico (Colonia Garcia, Sierra Madre Mts., Chihuahua),—Townsend..... ***sonorica** n. sp.

The variations in form and continuity of the basal thoracic bead, alluded to above under several species, is a very useful and distinct indication of specific difference that does not seem to have been noticed by Mr. Bates in dealing with the numerous Mexican species, many of which he unites under the name *sulcipennis* Burm. This species, as described by Burmeister, I do not seem to have at present, but *pimalis* approaches it rather closely in its metallic coloring, though specifically different; it is in no way closely allied to *arboricola* as stated in the check-list of Mr. Henshaw. I have not seen *viridicollis* Schf., and draw the above characters from his original description. A specimen before me from New Mexico seems so close to it, however, that it is better not to define it at present; it is 8 mm. in length, much more slender, and more narrowly oval than *arboricola* and has costæ 4 and 7 more elevated than the others as in *sonorica;* it agrees completely with the coloration of *viridicollis* as described by Schaeffer, but the prothorax seems to be much less transverse, being only a third wider than long and the lateral fossæ are almost obsolete. *Irregularis* is a singular form and for some time I was under the impression that it might be nothing more than a deformed specimen of *arboricola*, but the elytral sculpture between the first and fourth costæ and elsewhere, as described, is so peculiar that I have ventured to define it and assign it a place subordinate to *arboricola* provisionally; the very small antennal club was an important factor in reaching this decision. The somewhat prominent convex eyes of *angustula* constitute a remarkable feature of that distinct species, the exact habitat of which is unknown at present; it is unlike *arboricola* in habitus, though nearly similar in coloration.

Strigodermella n. gen.

The genus *Strigoderma*, as considered by Bates, includes four or five different generic groups, of which I would suggest one dismemberment under the above name. The species are of very small size and, because of their oblong form and deficient elytral striation, have a markedly different habitus from the larger species of the preceding genus, which have closely and regularly sulcate elytra. Besides this the ligula is relatively longer and flat, while in *Strigoderma* it is generally more or less concave; in *pimalis*, however, it is flat. The intermesocoxal space is variable in degree of tumidity. We have but one species as follows:

Form oblong, moderately convex, shining, black throughout, the anterior parts above with feeble violaceous or greenish lustre; elytra entirely black, except about three small pale spots on each, to entirely pale with the suture black and the external margin and a few small discal spots brownish; head densely punctato-rugose, the clypeus not quite parallel, rectilinearly truncate, with rather narrowly rounded angles, the edges rather strongly reflexed, the surface flat, the suture fine but deep and distinct; eyes very moderate, not prominent; antennal club not quite as long as the entire stem; prothorax two-fifths wider than long, the sides obtusely prominent before the middle, thence nearly straight and parallel to feebly converging to the base, converging apically, the prominent angles blunt at tip, the basal slightly more than right but only narrowly rounded; base medially lobed, the bead coarse and entire; surface evenly and moderately convex, not coarsely, irregularly punctate, sparsely medially, more closely antero-sublaterally, where the interspaces have also minute and very close punctulation, generally extending obliquely toward the middle of the base; scutellum closely but discretely, rather deeply punctate; elytra as wide as long, very broadly rounded at apex, parallel, with slightly arcuate sides and a little wider than the prothorax, the coarse though shallow striæ about seven in total number, closely but not deeply punctate, uneven laterally; pygidium with loose, feeble and irregular sculpture, tumid subcentrally; tooth of the anterior tibiæ acute and well developed, near the base of the reflexed and gradually acute apical process; hind tibiæ shorter than the femora or tarsi; intermesocoxal surface in the form of a narrow ridge. Length (♂) 4.6–5.2 mm.; width 2.6–2.9 mm. New Jersey to Florida. Very abundant. [*Melolontha pygmæa* Fabr.]..... **pygmæa** Fabr.

All of the very numerous examples in my collection seem to be males and I have therefore not recognized the female, but in the allied though notably different *marginata* Oliv., of Central America, the sexual differences are very pronounced but were not alluded to

by Mr. Bates. This species differs from *pygmæa* in its larger size, in having two short deep oblique fossæ at each side of the shining pronotum and in having the intermesocoxal surface more strongly and pronouncedly tuberculiform. The male has the elytra almost invariably pale throughout but black along the external margin, and the elytral striæ are extremely feebly, broadly impressed and very finely and feebly punctate; in the female the elytra are black, with two large transverse, sometimes confluent, pale areas and the striæ are very deep and sulciform and are coarsely, deeply punctate. The series before me consists of three males and four females, taken by Shimek at Mt. Ometepe, Nicaragua, at an elevation of 4000 ft. *Intermedius* Bates, of which I have an example from Guatemala, much more closely resembles our *pygmæa*, having the pronotum more densely punctate than in *marginata* and without the small lateral fossæ. The *Strigoderma exigua* of Schwarz, given under *Strigoderma* in the lists, has been described (ante p. 39) under *Anomala*.*

* Dr. Ohaus gives a long description (Stett. Ent. Zeit., 1905, p. 285) of a Florida species, which was thought by Schaeffer to be the same as *pygmæa* because no mention of the latter was made under the original description. As I do not certainly know the female of *pygmæa* and as the female of *marginata* is known to differ from the male in having deeply sulcate elytra, it may be possible that *floridana* Ohaus, which was said by the author to be founded upon the male, may in reality be the female of *pygmæa*. The description of Dr. Ohaus is essentially as follows:

Strigoderma floridana Ohaus.—Obscure greenish in color, slightly shining, the elytra deep black, with a large yellow spot at each side behind the scutellum and a transverse series of small yellow spots near the hind margin; clypeus quadrate, only slightly wider than long, the edges strongly reflexed, the surface somewhat concave and, like the front, feebly shining, thickly and strongly punctured and sparsely hairy, the occiput more finely punctate; prothorax strongly convex, widest before the middle, the sides converging posteriorly, the angles obtuse, the surface everywhere thickly and finely punctate, slightly shining, with intermingled deep punctures and with short fine yellowish hairs; scutellum relatively large, sculptured like the pronotum; elytra evenly and deeply sulcate, the punctures of the sulci annular, the series five in number between the suture and humeri, the entire surface with very fine punctures and transverse rugulosities, slightly shining, sparsely and briefly hairy; the vertical convex pygidium is indented at the middle and has feeble scratches; it is somewhat shining and sparsely hairy; legs short and stout, the external tooth of the anterior tibiæ near the terminal process; male with the larger claw of the intermediate tarsi thickened and elongated, scarcely visibly cleft. Length (♂) 5.5 mm.; width 3.0 mm. Florida (Titusville).

The size of the type is somewhat larger than in any of a large series of *pygmæa* before me, although the author states that *floridana* is the smallest Strigodermid known to him. The evidence seems at least to suggest that *floridana* is the female of *pygmæa*.

Alamona n. gen.

In this genus the ascending mes-epimera are slender and the tumidity of the mesosternum between the coxæ small, not at all pronounced and it is anteriorly pubescent. The body is stout, oblong, the pronotum devoid of any trace of lateral fossæ or medial sulcus, the ligula moderate in size, somewhat trapezoidal and concave and the subquadrate elytra have about thirteen feeble striæ. The tooth of the anterior tibiæ is very large, acute and conspicuous and, as a primary distinguishing feature, the hind tibiæ are very short, stout and rapidly obconic. The larger claw of the anterior male tarsi is of the usual type in the Strigodermids, being stout, with the upper ramus very small, short and slender. We apparently have two species, which may be defined as follows, the type being *parviceps:*

Body stout, oblong. convex, moderately shining, black beneath, the legs piceous, the hind femora paler; head, pronotum and scutellum nearly black, with moderate violaceous lustre, the sides of the pronotum pallid and also the basal margin medially, the elytra pale and bright tawny-flavate, with an inferior streak behind the humeral callus and the side margin posteriorly and also at base, blackish; head notably small, much less than half as wide as the prothorax, densely punctato-rugose, the clypeus less than twice as wide as long, flat, with moderately reflexed edges, rather broadly rounded angles and sides diverging but slightly basally, the suture fine but very distinct; eyes small, not prominent; antennal club evidently shorter than the stem; prothorax less than one-half wider than long, the sides parallel and nearly straight, becoming strongly convergent and nearly straight in apical third to the rather sharply defined and moderately prominent angles, the basal angles nearly right and scarcely more than blunt; base lobed medially and with an entire bead; surface rather coarsely but shallowly and closely punctate throughout, except along the smooth flat punctureless median line attaining base but not the apex; pubescence erect, rather abundant and gray; scutellum punctate except broadly along the middle; elytra glabrous, quadrate, barely as long as wide, two-fifths wider than the prothorax, the sides parallel and arcuate, more rounded broadly around the humeri, the apex broadly arcuate in about posterior third; surface shining but rugulose, the striæ feebly impressed, distinctly but not deeply punctate, the coarse post-humeral dark streak more impressed and scabrous; pygidium large, convex, shining, sparsely pubescent and with fine loose superficial sculpture; under surface and femora with abundance of long erect pale hairs; hind tibiæ very much shorter than the femora or tarsi, distinctly less than twice as long as wide. Length (♂) 8.0 mm.; width 4.7 mm. Texas (Del Rio),—Wickham.

parviceps n. sp.

Body in form somewhat as in *pygmæa* but larger; elytra dark brown to fulvous; head and pronotum brownish-metallic, in the paler examples with the side margins of the latter also pale; head and clypeus coarsely and densely punctate; clypeus with the edges moderately reflexed, the suture impressed; prothorax twice as wide as long, the sides arcuate slightly before the middle, parallel behind, obliquely converging to the anterior angles, which are right; surface coarsely and rather densely punctate, feebly impressed on each side, sparsely clothed with moderately long pale hairs; scutellum with a few coarse and irregularly distributed punctures; elytra slightly longer than wide, feebly arcuate at the sides, the three or four striæ nearest the suture regular, the others more or less confused, rather coarsely punctate; pygidium rugose; hind tibiæ wide and short, about twice as long as the apical thickness; last abdominal segment finely and densely punctulate, the other segments much more coarsely and sparsely; under surface and legs sparsely pubescent, the hairs cinereous. Length (♂) 8 mm. Texas (Galveston). Taken by Prof. Snow. [*Strigoderma latitibia* Schf.].....**latitibia** Schf.

The comparative dimensions of the prothorax and elytra in *latitibia*, would have to be grossly misstated in the description, above quoted from the original, in order to bring it into any decided harmony with *parviceps* and I have no doubt that the two species are different. The elytral striæ in *parviceps* are all regular and clearly defined. The climatic conditions of Galveston and Del Rio are radically unlike, the one being very moist and the other exceedingly dry and arid. The genus *Alamona* is more closely allied to *Epectinaspis* than to *Strigoderma* but is not identical.

Epectinaspis Blanch.

I am not quite certain that all the species described below belong truly to the genus *Epectinaspis*, for the statement by Bates that the clypeus in that genus is long and quadrate, will not apply to them. The clypeus in these species is of the normal transversality and differs from that characterizing other generic types, in being arcuately inflated at the sides and more or less constricted at base. The abnormal second group of *Strigoderma*, in the arrangement of Mr. Bates, seems to include nothing similar in the form of the clypeus nor in the general habitus of the body, as shown by the figures on the plate. The species in my collection, all of which have the middle coxæ approximate and the mesosternum narrow and non-tuberculate, are as follows:

Pronotum finely, extremely densely sculptured and opaque.....2
Pronotum shining and discretely punctate.....3

2—Form short, oblong, rather flattened above, deep black through every part of the body and legs, the elytra opaculate; under surface and legs shining; head less than half as wide as the prothorax, finely, densely punctato-rugulose and slightly shining, the clypeus slightly less than twice as wide as long, the parallel sides strongly rounded, the contour thence unbrokenly but more broadly rounded across the apex, the base notably constricted; its surface is deeply concave, with very broadly and strongly reflexed edges in about apical half, the suture very fine; eyes small, not prominent; antennal club short, oval, not as long as the five preceding joints; ligula large, excavated medially toward apex; prothorax large, barely a third wider than long, inflated at the middle, the sides thence feebly converging and straight to the base and strongly converging and subsinuate to the extremely acute and prominent apical angles, the basal slightly more than right but not rounded, only slightly blunt at their apices; basal lobe very broad and indefinite, the bead fine and entire; surface very evenly convex, without impressions or modified median line, extremely densely and finely punctulato-rugulose throughout and clothed rather conspicuously with erect whitish pubescence; scutellum scabrous, with polished edges; elytra quadrate, a fifth or sixth wider than the prothorax, parallel, scarcely visibly longer than wide, very broadly and obtusely rounded at apex, the sides broadly arcuate; surface with a sutural and two discal convex costules, the broad space between the sutural and first discal flat, closely, strongly and confusedly punctate broadly, that between the two discal, elevated medially, the ridge bearing a single series of very coarse and close-set punctures; humeral interval also bearing a regular series of punctures, which become broadly diffused over the humeral callus; submarginal interval strongly elevated; sulci all distinctly punctate; pygidium convex, extremely densely, finely punctulato-rugulose; hind tibiæ rather thick, not surate; external tooth of the anterior acute and distinct; middle coxæ very approximate, the intervening surface not at all prominent. Male with the larger anterior claw stout, gradually arcuately aciculate, the upper ramus very short and slender. Length (♂) 8.7 mm.; width 5.0 mm. Costa Rica (Chiriqui). . . . . ***quadripennis** n. sp.

Form more elongate and convex, subpyriform; under surface black, with shining greenish lustre, the abdomen rufescent; legs blackish to piceo-flavate; head black, small, two-fifths as wide as the prothorax, rather coarsely and moderately densely punctato-rugose; clypeus flat, gradually and very feebly reflexed peripherally, broadly arcuate at apex, with rounded angles, the sides parallel, broadly arcuate to straight, the fine suture evident; antennæ rather small; eyes not at all prominent; prothorax large, two-fifths wider than long, the sides broadly rounded medially, thence straight and parallel basally and converging and straight to the very acute prominent apical angles, the basal slightly more than right, not rounded; basal lobe feeble, the bead fine, entire, the surface rising convexly from it to the general level; surface evenly and strongly convex, not at all impressed, without modified median line and extremely densely and finely

punctulato-rugulose, becoming rather coarsely, shallowly punctate at the sides basally, clothed very inconspicuously with short erect dark gray hairs; scutellum scabrous, with shining edges, black, with feeble greenish tinge, the pronotum also black with greenish opaque lustre, generally irregularly pale along the sides and base; elytra oblong, parallel, very rapidly obtusely rounded at apex, a fourth or fifth wider than the prothorax and slightly longer than wide, either wholly black with feebly pallescent suture or pallescent laterally, at each side of the scutellum and broadly along the suture posteriorly; sides feebly arcuate; epipleura pale; sculpture as in the preceding but rather less coarse and with the entire surface shining, glabrous; pygidium pallescent, broadly tumid below the middle, having very dense and intricately rugulose sculpture but less fine than in the preceding; hind tibiæ (♀) only moderately stout. Length (♀) 9.5–10.8 mm.; width 5.6–6.2 mm. Mexico (Cuernavaca, Morelos), —Wickham.....*densicollis n. sp.

3—Body somewhat as in the preceding in general outline and convexity but shining throughout; head not half as wide as the prothorax, black, feebly shining, closely but rather discretely punctate, more coarsely basally, the front flattened; clypeus twice as wide as long, the lateral inflation very slight, the sides frequently parallel, the angles broadly rounded and the apex slightly arcuate; surface flat, gradually and very feebly reflexed peripherally, the suture deeply impressed and conspicuous, posteriorly oblique at the sides; eyes not prominent; antennal club small; prothorax two-fifths wider than long, the sides rounded at the middle, thence straight and parallel to the base and strongly converging and straight to subsinuate anteriorly to the very acute and prominent angles, the basal angles but little more than right, not rounded; base moderately lobed, the bead entire; surface convex, rather coarsely but shallowly, irregularly but generally closely punctate, with intermingled minute punctulation, the median line broadly smooth basally, unimpressed; color black, without metallic lustre, obliquely pallescent postero-externally or throughout at the sides, more broadly basally; scutellum finely, sparsely punctate; elytra a fifth longer than wide, two-fifths wider than the prothorax, parallel and feebly arcuate at the sides, abruptly and broadly rounded at apex, coarsely and deeply sulcate, the sulci moderately and closely punctate; intervals convex, the two discal ridges not more pronounced, the space between the inner and the sutural with a single impressed irregular series of punctures, broadening basally, the elevation between the two discal ridges with a loose series of very coarse and irregular punctures; ridges near the sides not very conspicuous; color black, the suture and sometimes the surface basally and from the humeri posteriorly, rufescent; pygidium convex, pallid, blackish apically, finely, rather closely punctulate and with intermingled minute punctulation, the sparse hairs short and stiff; legs only moderately stout. Length (♀) 9.3–9.5 mm.; width 4.8–5.3 mm. Mexico (Jalapa). Received from the Museum in the City of Mexico.....*nubicollis n. sp.

Body much smaller, shining, pale testaceo-flavate throughout, the head

blackish-subcupreous, the pale pronotum with a black green-metallic spot from more than middle half of the apex, gradually narrowing to the middle of the base, the basal margin also finely blackish throughout; scutellum pale, partially metallic-green, the elytra without trace of darker coloration or metallic lustre; pygidium, under surface and legs pale, the sterna blackish; head much less than half as wide as the prothorax, rather deeply but not coarsely, densely and evenly punctate; front broadly concave; clypeus strongly arcuate at the sides, thence continuously but less strongly across the apex, moderately constricted at base, the surface deeply concave, very broadly and strongly reflexed in about apical half, the suture very fine, barely traceable; eyes as in the preceding; antennæ blackish, the club (♂) barely longer than the preceding five joints; prothorax similar in outline and convexity to that of the preceding species, the basal bead strong, entire; surface coarsely and more or less closely but shallowly punctate, with sparsely intermingled fine punctulation, the punctures very dense in a sublateral spot at basal third, which is not so pronounced in *nubicollis;* median line not or barely visibly impressed but becoming smooth and punctureless basally; scattered hairs short and subdecumbent; scutellum finely but deeply, loosely punctate, smooth peripherally and broadly at base; elytra barely longer than wide, only a fifth or sixth wider than the prothorax, perfectly parallel, with virtually straight sides, rounding at base, the apex abruptly very broadly rounded; striæ only moderately coarse, rather deep, almost regular throughout the width, coarsely and closely punctate, nine or ten in number; intervals about equally and distinctly convex; pygidium finely, feebly and closely sculptured and with sparse, moderately long hairs. Male with the first four joints of the anterior tarsi compact and together rather shorter than the fifth, the larger claw stout, arcuate, sharply pointed, with the upper ramus very small, short and slender; posterior legs notably slender, more so than in any of the preceding female types, the hind tibiæ three times as long as wide, parallel, compressed; mesosternum between the coxæ very narrow and depressed. Length (♂) 7.7 mm.; width 3.9 mm. Mexico (Jalapa),—Hoege.

***gracilipes** n. sp.

It is possible that *gracilipes* may have been included in the material representing *mexicana* by Mr. Bates, as the same locality and collector mentioned above are cited for a part of that material. In *mexicana*, however, the legs in the male are particularly recorded, in the description of Burmeister, as being very stout; in *gracilipes* they are more slender than in almost any other type of the tribe Anomalini to be recalled at present. As *gracilipes* seems to be closely allied to *mexicana* in most respects, these facts are the more remarkable and inexplicable. The type of *gracilipes* was received

from a European dealer under the name *Epectinaspis mexicana* Burm.

There are certain facts and inferences tending to show that the tropical American genera in the vicinity of *Strigoderma* and *Epectinaspis*, are greatly confused and need revision. For example, in *Phyllopertha tolucana* and the above described *Epectinaspis gracilipes*, as well probably as *mexicana*, the mes-epimera display no tendency to ascend before the humeri, whereas the other three species, here assigned doubtfully to *Epectinaspis*, have distinctly ascending mes-epimera, as recorded likewise by Bates of several species, such as *moreletiana* Bl., which he also places under *Epectinaspis*. The peculiar inflated form of the clypeus, so strikingly developed in *gracilipes*, I cannot find described by Bates as pertaining to any of the Central American Anomalini. In the notably slender hind legs of both sexes, *Phyllopertha tolucana* and *Epectinaspis gracilipes* agree, but they do not agree at all in the form of the clypeus or in intermesocoxal structure, this being tuberculate in the former but depressed in the latter; we therefore have here two undescribed genera. Then the true *Epectinaspis*, as represented by *mexicana*, which appears to be similar to *gracilipes* in general organization but with very stout hind legs, forms another generic type. Again, we have forms with ascending mes-epimera and inflated clypeus, like the three above placed in *Epectinaspis*, and, finally, the aberrant forms placed in *Strigoderma* by Bates, which will necessitate the definition of two or three more genera. It is impossible for me to investigate this intricate subject further, because of deficiency of material.

Callirhinus Blanch.

The following species differs from *metallescens* Bl., in its smaller size and in coloration. The narrowed reflexed clypeus is very distinctive. The numerous derivatives were not worked out very thoroughly by Mr. Bates, who merely gave the outlines of certain color variations; there are however, without much doubt, some true species among them.

Form elongate-oval, convex, strongly shining, black throughout beneath, with feeble greenish lustre, the legs piceous to black, all the tibiæ paler and testaceous; upper surface glabrous, the lower with abundant long whitish hairs, rather dense on the sterna; head small,

much less than half as wide as the prothorax, densely punctato-rugose, black, with green lustre and sparse punctures basally; clypeus picescent, slightly wider than long, the sides broadly sinuate, rapidly oblique from base to apex, the latter barely more than a third as wide as the base, arcuato-truncate and gradually strongly reflexed, the sides not at all reflexed, the suture straight, very distinct; eyes not prominent; antennal club almost as long as the stem; prothorax about a fourth wider than long, the sides rounded medially, thence straight and parallel to the base and strongly converging to the apical angles, which are blunt at apex, the basal a little more than right and not rounded; basal bead feeble or subobsolete at the middle; surface convex, black, with polished bright green lustre, the sides flavate; punctures strong and deep, moderately coarse, rather irregular and sparse; median line very feebly impressed, obsolete basally; scutellum very minutely and sparsely punctulate; elytra oblong-oval, slightly longer than wide, two-fifths wider than the prothorax, with parallel arcuate sides, very pale brownish-flavate, the sutural interval with feeble greenish lustre, the lateral edges blackish; striæ barely at all impressed, regular and strongly punctured, thirteen in number; pygidium shining, with separated but transversely interlacing asperulate lines and with sparse, erect, silvery hairs. Male with the fifth anterior tarsal joint nearly as long as the first four, the larger claw stout, the lower part broad, obliquely truncate at apex, the upper rather thick basally, rapidly finely aciculate, about as long as the lower and, at base, about half as thick; hind tibiæ feebly surate. Length (♂) 8.0 mm.; width 4.3 mm. Mexico (Guadaljiro) ..... ***reflexus** n. sp.

This species differs from *metallescens* in its much smaller size, very pallid elytra and strongly attenuated, gradually very reflexed clypeus, among other characters. The figure of *metallescens* given by Bates, indicates a much larger head and more transverse prothorax than in *reflexus*, though with nearly similar clypeus.

Tribe RUTELINI.

This tribe is composed of larger, more densely chitinized and generally more brightly metallic species than the preceding and is particularly well developed in the American continents, including some of the most regally resplendent beetles of the world, belonging principally to such genera as *Plusiotis*, *Chrysina* and *Chrysophora*, as well as *Anticheira*, *Ptenomala* and *Calomacraspis*. But few of these brilliant forms extend to the northward of our Mexican boundary, and such genera as do so extend their limits, or are peculiar to the nearctic regions, may be defined as follows:

Pronotum with basal beading, generally strong and distinct throughout the width 2

Pronotum without trace of such basal marginal beading; clypeus narrowed anteriorly, bilobed or bidentate at apex. (Group RUTELÆ).....7
2—Clypeal suture obsolete medially. (Group PELIDNOTÆ).....3
Clypeal suture very distinct throughout the width. (Group AREODÆ)..6
3—Mandibles obtusely bidentate externally; posterior legs nearly similar in the sexes. North and South America.....**Pelidnota**
Mandibles broadly though more or less unevenly rounded externally; ligula extremely short; labrum very diversely modified medially..4
4—Posterior legs very greatly enlarged in the male. Mexico..**Chrysina**
Posterior legs nearly similar in the sexes.....5
5—Head large, the reflexed prosternal process prominent. Warmer parts of North and South America.....**Plusiotis**
Head small, the reflexed prosternal process inconspicuous. Sonoran. **Plusiotina**
6—Clypeus transversely parallelogramic; body glabrous above, pubescent beneath. Nearctic regions east of the Rocky Mountains..**Cotalpa**
Clypeus semicircular, the integuments pubescent above as well as beneath. Pacific regions, eastward to the Rocky Mountains.....**Pocalta**
Clypeus triangular; integuments glabrous above, coarsely and closely sculptured, pubescent beneath. Sonoran regions.....**Parareoda**
7—Tarsal claws entire throughout; intermesocoxal surface broad, flat and anteriorly advanced to a moderate degree; upper surface of the body smooth, or with very minute sparse punctulation. Neotropical regions and Florida.....**Rutela**
Tarsal claws irregular, the male having the larger of the intermediate and posterior tarsi very coarsely and deeply cleft, both claws of the anterior smaller and simple; female with all the claws slender and simple; intermesocoxal surface narrow, not prominent; upper surface of the body coarsely and deeply sculptured. Atlantic nearctic regions ..... **Polymœchus**

All of these genera have the scutellum relatively small, in marked contrast to some of the tropical genera, such as *Anticheira*, where this part is enormously developed and the antennæ are 10-jointed throughout, differing also in this way very markedly from the Anomalini. I have included *Chrysina* above among our genera, for the reason that the National Museum has the mutilated hind body of a large green species, which seems to represent the female of a *Chrysina;* it was found by Mr. Schwarz in southern Arizona. No further allusion to the genus than this will be made at present.

Pelidnota MacL.

In this genus the body is oblong-oval in form, rather convex, variably but always distinctly sculptured and glabrous above, very feebly pubescent on the sterna and with opalescent metallic lustre, or almost wholly devoid of such lustre, usually of pallid

coloration but, as a remarkable exception, *lugubris* Lec. is deep black throughout the body and legs. The clypeus is parabolic, more or less truncate at apex, the labrum short, deeply impressed medially, the ligula very short and the moderate quadrate mentum more or less impressed or declivous anteriorly; the post-coxal process of the prosternum is well developed and the flat intermesocoxal surface is rather wide and somewhat anteriorly projecting, though obtuse, and the meso-metasternal suture is usually evident, though always feeble. The pygidium is sometimes almost entirely covered by the elytra and the last spiracle is in or just below the dorso-ventral suture as it is in *Plusiotis;* it is very large and conspicuous and the part of the suture between the spiracle and the base is obliterated. The lateral margin of the elytra is often much thickened basally in the female. The South American *Odontognathus* is closely allied to *Pelidnota*, but the ligula is more on the same plane as the mentum and is similar in its bright metallic lustre; in *Pelidnota* the ligula is not so evenly continuous in plane and is frequently blacker or without metallic lustre. In the following table a few Mexican species, believed to be undescribed, are included. There are three rather well defined subgeneric groups as follows:

Clypeus entire 2
Clypeus emarginate and prominently bidentate 3
2—Head smaller, never notably more than half as wide as the prothorax; body more convex, the elytra not spinose at the apical angles, though generally minutely denticulate; coloration generally non-metallic. [Type *P. punctata* L.] . . . . . Group I
Head large, always much more than half as wide as the prothorax; body much less convex and more oval, the elytra always spinulose at apex; colors more metallic. [Type *P. strigosa* Cast.] . . . . Group II
3—Body smaller in size, with thicker integument and more strongly metallic coloration. South American, but one species recorded from north of the Isthmus of Panama. [Type *P. belti* Sharp] . . Group III

The species of these groups, when segregated, are visibly different in habitus and undoubtedly constitute valid subgenera, and a fuller knowledge of all the known species would probably reveal several others besides.

Group I.

Subgenus **Pelidnota** in sp.

This subgenus,—that is, the typical *Pelidnota*—may be rather more abundantly developed in the colder than in the warmer regions of the continent. The body is oblong-oval, always rather strongly convex and diversely colored; those with yellow-brown, non-metallic coloration, having three black points on each elytron, are numerous in the nearctic regions but are wanting on the Pacific coast; they are closely allied and difficult to treat taxonomically, and have never been studied systematically thus far; the following arrangement of the forms in my collection is therefore merely provisional or tentative.

Body pale in color above.....2
Body castaneous above, the head and prothorax black, with metallic-greenish lustre.....8
Body intensely black above and beneath throughout and without metallic lustre.....9
2—Head black, the clypeus and obtuse angular prolongation from the latter on the front pale.....3
Head wholly pale in color, though generally slightly blackish along the upper margin of the eyes.....4

3—Ligula narrower; body more cylindric, testaceous, with distinct blue-green metallic gloss, piceous beneath, with stronger greenish-metallic lustre; clypeus (♂) triangular, with the apex slightly reflexed and truncate, barely a third as wide as the base, which is three-fourths wider than the length, the angles rounded, the surface coarsely, very densely punctate; remainder of the head also coarsely but loosely punctate to the base; prothorax convex, twice as wide as long, obtusely angulate at the sides just behind the middle, the sides parallel and straight thence to the obtuse and rather rounded basal angles and converging and straight to the prominent and acute apical angles, the peripheral bead very coarse and strong, entire except for a short distance at the middle of the apex; punctures rather small but deep, sparse, coarser and more close-set laterad; elytra not evidently wider than the prothorax, cylindric, obtusely rounded at apex, rather more than a fourth longer than wide, having broadly but very feebly impressed lines, each lineate with very small and widely spaced punctures, the general surface with very fine sparse punctures, the interspaces not sculptured; pygidium with rather coarse, mingled with finer, sculpture, basally, smooth and with very sparse fine punctures thence to the tip; femora and tibiæ testaceous, each with a broad black metallic stripe along the middle of the lower face from base to apex, the tarsi pale, with the apices of the joints dark; mesosternal process unusually acuminate anteriorly. Male with the sixth ventral feebly sinuate at the middle of the apex, the pale additional segment,

visible in the sinus, rounded behind. Length (♂) 22.0 mm.; width 11.0 mm. Honduras (San Pedro Sula).....*composita n. sp.

Ligula shorter and broader; body more oblong-oval and in general without metallic lustre as in the succeeding species; clypeus (♂) with rounded, broadly converging sides, twice as wide as long, the apex broadly arcuato-truncate, with broadly rounded angles, about two-thirds as wide as the base and only very finely and feebly reflexed, or (♀) less transverse, trapezoidal, with straighter sides and more narrowly truncate and distinctly reflexed apex, which is barely more than half as wide as the base, rather closely, strongly punctate, more finely in the male, the remainder finely and sparsely punctate, rather more strongly toward the middle of the front; antennal club shorter than the stem but not greatly so in the male, differing but little sexually; prothorax fully twice as wide as long, in outline nearly as in the preceding and with similar ambient bead, but with blunter apical, and much less rounded basal, angles, very finely and sparsely punctate, the punctures stronger, closer and more or less mingled with minute punctulation laterad; scutellum nearly smooth, entirely black with metallic gloss, to pale with metallic black margins; elytra each with three black dots, together nearly a third longer than wide, barely wider than the prothorax, circularly rounded at apex, the sides feebly arcuate, less so basally; surface minutely, remotely punctulate, with feebly defined and irregular series partially visible, the punctures suturally a little less minute, and, toward the sides, mingled more or less closely with minute feeble punctulation; under surface and legs wholly deep black with very feeble greenish lustre, the porrect mesosternal process broad and obtusely rounded at tip; pygidium with well separated transverse intermingling scratches which become sparser apically. Male with the sixth ventral nearly as in the preceding, smooth and very feebly impressed; female with the fifth ventral not modified, the sixth nearly smooth, the surface apically with two tumidities, separated by an anteriorly narrowing, moderate and but feebly sculptured concavity, the pygidial margin slightly broadened medially on its under surface as usual, the pale supplementary coriaceous seventh segment of the male not visible. Length (♂♀) 20.8–24.0 mm.; width 11.5–13.0 mm. New York and Virginia to Michigan and Iowa. Abundant. Males much less abundant than the females. [*Scarabæus punctatus* Linn.]

punctata Linn.

A—Similar to the preceding but larger and especially much broader, the elytra more inflated posteriorly, the anterior thoracic angles more acute an ! sharp and the basal nearly similar, the sculpture of the pronotum stronger and more confluent laterally and that of the elytra with the shallow fine sculpture toward the sides dense and almost confluent, the punctures toward the suture basally much coarser and deeper; pygidium more densely and deeply, intricately sculptured in transverse lines, the apex more narrowly rounded and the sides much more sinuate; legs dark testaceous throughout, the tarsi piceous. Female with the fifth ventral concave medially at apex, the sixth with rather close-set sculpture

of incised transverse lines throughout, the apical tumidities more widely separated than in the preceding, the tumidities with separated punctures. Length (♀) 25.0 mm.; width 14.4 mm. Probably Indiana..... **strenua** n. subsp.

B—Similar in coloration and in the well developed elytral spots but with the body smaller in size, rather more depressed and very much more abbreviated in all its parts, the clypeus (♀) still more broadly subtruncate at apex, the prothorax shorter and broader than in any other form of the genus, fully two and one-half times as wide as long; elytra barely a fourth longer than wide, just visibly wider than the prothorax; legs shorter, the tarsi, especially, very much shorter and not so thick; pygidium densely sublinearly scabrous, the apical lobe broadly rounded, the sides of the apex sinuate. Length (♀) 20.4 mm.; width 11.5 mm. Long Island. **brevis** n. subsp.

4—Pronotal punctures very fine and sparse as in the preceding, the elytral series seldom at all well defined and never impressed; sixth ventral smooth in the male. Atlantic nearctic regions.....5

Pronotal punctures relatively coarse and deep, the elytral series feebly impressed; sixth ventral in the male densely sculptured throughout. Tropical Atlantic South America.....7

5—Body distinctly larger in size than *punctata* but less stout than in *strenua*. Form oblong-oval, more oblong and less convex than in *punctata*, evenly pale red-brown in color, shining, the elytra each with a sublateral series of three black dots as usual in the American species; under surface piceous to more or less rufescent, with very feeble metallic gloss, the legs pale testaceous throughout; head (♂) unusually large for this subgenus, slightly more than half as wide as the prothorax, with rather prominent eyes, the trapezoidal clypeus having just visibly arcuate sides, truncate and feebly reflexed apex, two-thirds as wide as the base, and broadly rounded angles; it as well as the head is sculptured very nearly as in *punctata;* prothorax more transverse, more than twice as wide as long, the sides almost evenly arcuate; apical angles but slightly blunt, the basal similar, the ambient bead coarser, flat and dilated at the base medially, the surface nearly similar, more densely though finely sculptured laterally, the usual blackish sublateral spot similarly nearly smooth; elytra shorter, barely at all longer than wide, very obtusely rounded at tip, behind the middle distinctly wider than the prothorax, sculptured nearly as in the preceding, the minute lateral sculpture dense, the punctures toward the suture very fine and sparse; pygidium convex, shining, with well separated anastomosing transverse scratches, smooth toward apex; mesosternal process obtuse, barely as long as wide before the suture. Male with the sixth ventral short, only a little over half as long as the fifth, with the usual medial sinuation, and exposing the pale coriaceous seventh segment; female much more elongate than the male, the elytra fully a fourth longer than wide, less obtusely rounded at apex, the fifth ventral barely at all modified, the sixth feebly and sparsely sculptured, the tumidities well separated, the concave surface between them sparsely and transversely strigilate

and parallel-sided. Length (♂ ♀) 23.0–25.0 mm.; width 12.7–13.4 mm. Louisiana.....**oblonga** n. sp.

A—Nearly similar but more oval and more convex, the head (♀) very nearly half as wide as the prothorax, the latter similar but with a series of fine punctures extending transversely across the median part of the apex; pygidium entire; under surface and legs black, with feeble violaceous lustre, the tarsi black, the central part of the lower hind femoral face with a feeble pallid streak, the tibiæ pale, with the upper and lower surfaces black. Length (♀) 25.5 mm.; width 13.6 mm. District of Columbia.....**ponderella** n. subsp.

B—Similar to *ponderella*, more convex and elongate-oval than in *oblonga* and with an unusually small head, which is much less than half as wide as the prothorax; coloration and sculpture above nearly similar, the entire under surface deep black, with greenish lustre, the tarsi throughout black, the anterior legs pale, the intermediate and posterior with the femora partially pale and the tibiæ wholly pale, except along the upper edge; pygidium black, margined beneath with flavate-brown. Female sexual characters nearly as in *oblonga;* in *ponderella* the sixth ventral is nearly similar but is more transversely impressed in front of the two posterior tumidities. Length (♀) 23.7 mm.; width 13.5 mm. New Jersey (Atlantic City).....**debiliceps** n. subsp.

Body as in *punctata* in point of size, and in ornamentation as a rule, to distinctly smaller but invariably with the entire legs and tarsi pale testaceous.....6

6—Female with the sixth ventral not strongly impressed transversely, always having two distinctly defined apical tumidities, separated nearly as in *punctata;* hind tarsi developed as usual. Form oblong-oval, convex, shining, pale yellowish-testaceous throughout above, the elytra without trace of any of the usual six black dots, the under surface blackish, with more or less varied metallic lustre, the hind coxæ pale like the legs; head and clypeus nearly as in *oblonga* in both sexes and sexually similar, much less than half as wide as the prothorax, the latter also similar, shorter than in *punctata*, much more than twice as wide as long in both sexes and with the minute sparse punctures stronger, the darker smooth sublateral spot very small; scutellum more or less metallic as usual, the margins darker; elytra a fourth longer than wide in both sexes, nearly as in *punctata* but with the feebly defined series of punctures generally somewhat impressed, the finer diffused punctuation rather distinct; pygidium pale throughout, with transverse, anastomosing and well spaced scratches, smoother apically, more convex in the male, with the converging lower margins less sinuate than in the female; hind tarsi three-fourths (♂) or two-thirds (♀) as long as the tibiæ. Length (♂ ♀) 20.5–22.5 mm.; width 11.5–12.0 mm. Florida,—the locality unrecorded. [*Melolontha lutea* Oliv.].....**lutea** Oliv.

A—Nearly as in *lutea* but smaller, still more parallel and less convex, the coloration throughout identical, except that the elytra each have two spots of the usual three though very small, the humeral obsolete in the type; head similar; prothorax also similar but still

more abbreviated, nearly two and one-half times as wide as long; elytra similar but more depressed; pygidium still more sculptureless toward apex and with the sides more sinuate. Length (♂) 20.0 mm.; width 10.7 mm. Florida (Jacksonville).

brevicollis n. subsp.

B—Nearly as in *lutea* and with similar convex surface and short transverse prothorax, which is rather more than twice as wide as long, but with the usual three black spots on each elytron, which are however smaller as a rule than in *punctata;* under surface blackish, largely pale peripherally throughout, the legs and pygidium similarly invariably pale testaceous throughout. Length (♂♀) 20.0–23.3 mm.; width 10.9–13.0 mm. Virginia to Mississippi. Abundant.....**pallidipes** n. subsp.

C—Form, size and coloration throughout nearly as in *lutea* but always having the three black spots on each elytron well developed; head notably smaller, the clypeus (♀) more narrowly parabolic; prothorax relatively narrower and less transverse, distinctly narrower than the elytra and not quite twice as wide as long; elytra nearly similar in form and sculpture; pygidium in both sexes more narrowly rounded at apex, especially in the female, the latter sex having the apical concavity of the sixth ventral nearly as in *lutea*, small, deep and almost parallel-sided; hind tibiæ (♀) shorter than usual, not as long as the femora, the terminal spurs subequal. Length (♂♀) 20.0–21.7 mm.; width 11.3–12.2 mm. Texas (Horristo). Four examples.....**texensis** n. subsp.

D—Form and coloration nearly as in *texensis* but a little larger, the head rather better developed and nearly half as wide as the prothorax, which is similarly less than twice as wide as long and evidently narrower than the elytra, the latter about a fourth longer than wide and with vestiges of impressed striation more evident; hind legs normal, the tibiæ as long as the femora, the spurs very unequal in size; female with the apical cavity of the sixth ventral wider and shallower, its sides strongly anteriorly converging. Length (♂♀) 22.5 mm.; width 12.0–12.6 mm. New York (Peekskill). The male associated with the female type bears no locality label, but appears to be identical specifically.

hudsonica n. subsp.

Female with the sixth ventral strongly impressed transversely in about anterior half, the evenly elevated posterior part with a small median excavation, the lateral transverse parts even and not tumidiform; tarsi much smaller and more slender than usual. Form oblong, moderately convex, colored throughout as in *lutea* but with three well developed black dots on each elytron; head rather small, much less than half as wide as the prothorax, formed nearly as in *lutea*, as is also the prothorax, which is short and much more than twice as wide as long; elytra in form and sculpture nearly as in *lutea* and not distinctly wider than the prothorax; pygidium nearly similar; legs rather shorter and less stout; hind coxæ shorter, the outer posterior angle more produced posteriorly. Length (♀) 20.5 mm.; width 11.3 mm. New York (Peekskill).....**tarsalis** n. sp.

7—Body oblong-oval, strongly convex, moderately shining and pale luteo-flavate in color throughout above, without trace of metallic lustre, except an excessively faint glint on the pronotum; under surface and pygidium very uniform piceous-brown, with very feeble metallic lustre, the legs and tarsi uniform pale brownish-testaceous, with feeble coppery lustre; head fully half as wide as the prothorax, rather strongly but sparsely punctate, the clypeus more coarsely and confluently, broadly trapezoidal, with slightly arcuate sides, the apex feebly reflexed, truncate and barely two-fifths as wide as the base, with rounded angles as usual; eyes very moderate; antennal club a little shorter than the stem; prothorax slightly more than twice as wide as long, the sides parallel and straight basally, converging and nearly straight in more than apical half, broadly rounded at the turn, the apical angles moderately acute, the basal more than right but not rounded; ambient bead very thick at the sides, entire at base; surface deeply punctured, rather coarsely and closely laterad; scutellum wider than long, much rounded, minutely and remotely punctulate; elytra rather inflated and somewhat wider than the prothorax posteriorly, a fourth longer than wide, broadly, obtusely rounded at apex, the sutural angles obtuse, without trace of dentition; surface with very feebly and obsoletely impressed lines and widely and remotely diffused, excessively minute punctulation, the punctures of the impressed lines more evident but feeble; pygidium densely, transversely and rather coarsely vermiculato-rugose, more discretely though closely punctate at apex, nude, with a few setæ at the apical margin; mesosternal process rather narrow; legs notably stout; last ventral (♂) densely sculptured in anastomosing transverse lines, slightly shining, the apical sinuation very feeble, the coriaceous seventh segment very short, black in color. Length (♂) 25.0 mm.; width 13.8 mm. Brazil (Para),—Baker.

*testaceipes n. sp.

8—Form briefly subcylindric, alutaceous in lustre, dark rufo-castaneous throughout, the head, pronotum and scutellum black, with greenish lustre, the tibiæ and tarsi blackish, not metallic, the elytra with extremely faint violaceous lustre; head half as wide as the prothorax, with rather prominent eyes, somewhat sparsely, unevenly and irregularly sculptured throughout and on the clypeus, which is more opaque, short and broadly trapezoidal, the apex but very feebly reflexed and not half as wide as the base; antennæ red-brown, the club not quite as long as the stem; prothorax not quite twice as wide as long, notably convex, the sides broadly rounded, converging slightly basally and gradually anteriad, the apical angles prominent, the basal obtuse but not rounded, the ambient bead strong, entire at base, abruptly obliterated for a short distance medially at apex; punctures rather sparse, fine but distinct, a little stronger and closer laterad; scutellum wider than long, nearly smooth; elytra barely wider than the prothorax, parallel, with subevenly arcuate sides, abruptly very obtuse at apex, nearly a third longer than wide; sculpture micro-reticulate and with unimpressed series of small and widely spaced punctures, obsolete laterad; pygidium with transverse

interlacing wavy scratches, nearly smooth apically; mesosternal process smaller and less obtuse than in the *punctata* type though evident. Male with the sexual characters of *punctata;* legs moderate, the tarsi rather long. Length (♂) 18.7 mm.; width 10.0 mm. Lower California (San José del Cabo)..... **lucæ** Lec.

9—Body oblong-oval, convex, when mature deep shining black throughout every part of the body and legs, without metallic lustre, the antennæ piceous, with the club (♂) about as long as the stem, or (♀) a little shorter; head about half as wide as the prothorax; punctures of the clypeus—extending to middle of the front—dense and confluent, the basal parts strongly but sparsely punctate; clypeus narrower than usual, not twice as wide as long, trapezoidal, the apex distinctly reflexed, arcuate and two-fifths as wide as the base, nearly similar in the sexes; eyes slightly prominent; prothorax convex, not quite twice as wide as long, the sides broadly arcuate, widest near the middle, the basal angles not only not at all rounded but sometimes slightly prominent, the bead entire at base, unusually fine at the sides and very widely obsolete at apex; punctures very fine and sparse, becoming closer and intermingled with close opaculate rugulosity toward the sides; scutellum wider than long, shining, nearly sculptureless; elytra slightly inflated posteriorly and evidently wider than the prothorax, less than a fourth longer than wide, very obtusely rounded at apex, shining and finely, remotely punctate suturad, becoming gradually finely sculptured and alutaceous laterad; pygidium with distinct transversely interlacing scratches throughout, shining; mesosternal process smaller and narrower than in *punctata;* metasternum smooth medially, toward the sides with the wavy oblique scratches sparser and finer than usual. Male with the sixth ventral short, sinuate medially at tip, the coriaceous seventh segment testaceous; female with the sixth segment sparsely but strongly, linearly sculptured throughout, rounded at apex, sometimes truncate medially, the surface posteriorly not bitumorose as in the *punctata* type but broadly and slightly convex medially. Length (♂♀) 16.5–20.0 mm.; width 9.4–11.5 mm. Arizona (Congress Junction and Tucson)..... **lugubris** Lec.

Composita, as defined above, is allied to *virescens* Burm., but differs in coloration and in its feeble sculpture; it is perhaps closer to the allied *aurescens* of Bates, but is much narrower and more elongate-cylindric in outline; the head, also, seems to differ in coloration from that of any of the forms allied to *virescens* described hitherto. *Testaceipes* is allied to *chalcothorax* Perty, and perhaps also *sordida* Germ., but it differs from both of them in the very pallid tarsi. *Texensis* has shorter legs than usual and notably stout tarsi, but the forms clustering about *punctata* Linn., are difficult to differentiate in any very positive manner, although I think there are several that must be accorded specific standing.

Group II.

Subgenus **Pelidnotidia** nov.

The species of the *strigosa* type, abundant in Mexico, have a peculiar and isolated habitus due to their more elliptical outline, less convex surface, more thickened lateral elytral margin, especially in the female, in their large head, spinulose and not edentate or only very minutely denticulate elytral apices and in their more metallic coloration. Without having any very decided structural divergence in special organs, I think therefore that they should be designated by a special subgeneric name as above. The species in my collection may be known as follows:

Pronotum concolorous and sparsely punctulate medially, the legs and tarsi more slender; surface lustre more or less metallic.....2

Pronotum blackish, with testaceous side margins, more strongly and closely punctate; legs and tarsi notably stout; surface lustre not definitely metallic.....5

2—Lateral angle of the hind coxæ not or barely at all prominent posteriorly.....3

Lateral angles notably prominent posteriorly.....4

3—Body narrower and more elongate-oval, testaceous, the elytra more flavate, the entire upper surface with feeble pearly-green lustre; pygidium and under surface blackish, with strong greenish lustre; legs metallic green, the upper and lower edges of the femora and tibiæ testaceous, the tarsi pale; head fully three-fifths as wide as the prothorax, with rather well developed eyes, the clypeus closely and rugulosely punctate but shining, almost semicircular, twice as wide as long, the apex distinctly, the sides finely and more feebly, reflexed; front less closely punctate, the occiput finely and sparsely; antennal club not as long as the stem; prothorax a little more than twice as wide as long, widest slightly behind the middle, the sides broadly rounded; sides feebly converging toward base, more gradually and straighter anteriorly, the prominent angles very sharply acute, the basal angles obtuse but only narrowly rounded; ambient bead strong, entire, except medially at apex, the surface finely, sparsely punctate, more strongly and a little more closely toward the sides; scutellum transversely rounded; elytra barely wider than the prothorax, parallel, with broadly arcuate sides, fully a third longer than wide, circularly rounded at apex, the lateral edges thickened to behind the middle, the apical spines small, oblique; surface with fine and very obsoletely impressed, not distinctly punctured lines; elsewhere with sparse microscopic and indistinct sculpture; pygidium with rather fine and close, transverse interlacing lines, becoming smooth and sparsely punctulate apically; mesosternal process well developed. Length (♂) 22.0–23.0 mm.; width 11.7–11.9 mm. Mexico (Guerrero), Baron.....***permicans** n. sp.

Body large and broadly oblong-oval, pale brownish in color, with shining pearly cupreous lustre above, the shining black under surface and legs with strong cupreous lustre, becoming green at the sides of the hind coxæ; head large, fully three-fifths as wide as the prothorax, the eyes somewhat prominent; surface densely punctate, sparsely toward base; clypeus large, semicircular, gradually strongly reflexed at apex but not at the sides, more than twice as wide as long; prothorax twice as wide as long, nearly as in the preceding but with more evenly rounded sides, the apical angles very acute and sharp, the basal obtuse and distinctly rounded; basal lobe more distinctly truncate at the scutellum, the ambient bead strong and not interrupted even at the middle of the apex; punctures fine but deep, sparse, becoming coarse but not dense toward the sides; elytra not more than a fourth longer than wide, distinctly wider than the prothorax, circularly rounded at apex, the sides behind the base (♀) subexplanate and much thickened; surface with the striæ broadly and moderately impressed and coarsely, closely punctate basally, finely, feebly and obsoletely punctulate posteriorly and laterally; punctures of the broad second interval basally coarse and conspicuous; pygidium black, with green lustre, very densely and transversely vermiculato-rugose throughout in the female, the sixth ventral in that sex slightly flattened, polished and almost sculptureless throughout, broadly arcuate behind. Length (♀) 30.0 mm.; width 15.5 mm. Guatemala (Esquintla).....***cuprascens** n. sp.

4—Form nearly as in the preceding but more narrowly elongate-oval, the brownish-testaceous upper surface with feeble pearly-green lustre, the pygidium and under surface dark, with rather bright greenish lustre; legs slightly varicolored, metallic in lustre; male paler in coloration than the female; head large, nearly similar in the sexes, except that the sculpture is coarser and denser in the female and the eyes a little larger and more convex in the male; clypeus more than twice as wide as long, semicircular, the apex broadly, feebly reflexed (♂), or more narrowly and strongly (♀); prothorax smaller and shorter than in the preceding, more than twice as wide as long, the outline and beading nearly similar, the basal lobe not so truncate at the scutellum; punctures fine but deep and sparse, becoming coarse, close and irregularly confused laterally; scutellum small, transversely semicircular; elytra a third (♂) to fourth (♀) longer than wide, more inflated at about basal third in the latter and with more thickened subexplanate edges, continuing almost to the apex but greatly diminishing, strongly rounded at apex; sculpture of the same general type as in *cuprascens* but not quite so conspicuous; pygidium more convex and nearly smooth except basally (♂), or densely vermiculato-rugulose (♀); sexual characters nearly as in the two preceding, the mesosternal process rather more slender than in *cuprascens*. Length (♂ ♀) 24.0–28.0 mm.; width 12.3–15.0 mm. Honduras (San Pedro Sula). Five examples. .***strigosa** Cast.

Form and coloration nearly as in *strigosa* but smaller in size and more uniformly testaceous, with faint pearly greenish lustre throughout above, the head and pronotum not darker in shade than the elytra,

the under surface and pygidium darker, piceo-testaceous, with stronger metallic-green lustre; legs very pale testaceous throughout, the femora faintly viridescent, the tibiæ cupreous; head and clypeus nearly as in *strigosa*, the eyes relatively a little larger; prothorax similar but shorter, rather more than twice as wide as long, the surface similarly but everywhere still more finely and sparsely punctate, becoming impunctate near the sides; scutellum short, rounded, wholly impunctate; elytra but little wider than the prothorax, with feeble punctulate lines, coarser basally nearly as in the preceding but shorter, more parallel, very evenly and feebly arcuate at the sides and more rapidly and obtusely rounded at apex; under surface nearly similar, the legs rather slender, the sixth ventral of the male with the coriaceous segment filling the apical sinus similarly pale in color; pygidium nearly smooth, very shining. Length (♂) 22.0 mm.; width 11.5 mm. Colombia..... ***refulgens** n. sp.

Form more oblong and parallel than in *strigosa* and piceous throughout above, with feeble greenish lustre, more polished and less pearly than in that species, the pygidium and under surface black, with polished greenish lustre, varied with coppery on the abdomen; legs testaceous, the femora and tibiæ largely black, with shining green lustre along the lower surfaces; head and clypeus nearly as in *strigosa*, the prothorax also similar though not evidently narrower than the elytra, the punctures sparse but deep and very distinct to the thick lateral beading anteriorly, becoming sparser and fine postero-laterad; apical margin not wholly obsolete medially but extending entirely across, though flat and feeble medially; scutellum less transverse; elytra less elongate, the parallel sides feebly and more evenly arcuate, the apex much more rapidly and obtusely rounded, the dilated lateral margin nearly similar and as also in *refulgens;* striæ fine, very feeble but more sharply punctulate than in either of the two preceding, becoming very wide and with extremely coarse but similarly ill-defined, shallow and chagrined punctures basally; scutellum smooth apically; under surface and legs similar in structure, the sixth ventral of the male with the sinus less shallow, the coriaceous seventh segment less abbreviated and darker in color. Length (♂) 22.7 mm.; width 12.2 mm.; Honduras (San Pedro Sula). ***obscurella** n. sp.

5—Body more parallel and oblong-elongate, blackish, the pronotum finely ochreous along the lateral margins, the elytra pale ochreous, without trace of metallic lustre, the under surface and very convex pygidium with faint æneous lustre; head and clypeus densely punctate, the occiput more sparsely and shallowly; prothorax with rather strong punctures, well separated medially but dense and confluent toward the sides, not twice as wide as long, of the usual outline, the apical bead obsolete medially; scutellum slightly transverse, ogival; elytra a third longer than wide, the sides rounding in nearly apical half, the marginal bead (♂) but little thickened and obsolete at or before the middle, the series of small but distinct punctures almost regular and unimpressed throughout the width, the striæ not coarse basally, as in all the preceding, but with the punctures toward the

scutellum coarse and irregularly diffused; abdomen with fine close sculpture almost throughout, the rugulæ of the metasterum much coarser and deeper than in any of the preceding; all the legs are much stouter but varicolored as in *strigosa*. Male with the sinus of the sixth ventral broad and extremely shallow. Length (♂) 27.5 mm.; width 13.4 mm. Honduras (San Pedro Sula)..***punctulata** Bates

Punctulata differs from the usual type of this subgenus in coloration, sculpture of the pronotum and elytra and especially in the relatively stout legs throughout, a character that was not noticed by Mr. Bates; the spines at the apices of the elytra are also much reduced in size. The stout legs of this species may be a sexual character to some extent, as it is not very evident in the figure given of a female of *punctulata* which, even allowing for the sex of the individual, is much too stout and oval, if the Honduras example described above is entirely typical.

Group III.

Subgenus **Delipnia** nov.

The assumed type of this division of the genus is the *Pelidnota belti* of Sharp, which, at the time it was described at least, was the only form occurring north of the Isthmus of Panama; the species are numerous and apparently abundant individually in South America. The lobes of the clypeus are prominent in both sexes, but the notch is always deeper and the clypeus more narrowed and apically reflexed in the female than in the male. This is a very distinct section of *Pelidnota*, largely a geographic development, and should be given a distinctive name, although in the genus at large a number of other divisions, equally worthy of such distinction, undoubtedly exist.

Plusiotis Burm.

This genus is allied to *Pelidnota* but is well distinguished by the unbroken outer outline of the mandibles, as well as by a less definable but none the less evident difference in the general habitus and coloration of the body; this is due, in large part, to the shorter, more oblong-oval form and denser and less pellucid or pearly coloration. Almost all the structural characters of the under surface and legs are identical in the two genera, or so nearly alike that no practical use could be made of the differences in classifica-

tion, and yet there could be no doubt whatever of the reality of *Plusiotis* as a genus. Very much the same condition of generic distinctness obtains between *Pelidnota* and the Brazilian *Chalcoplethis*. In *Plusiotis* the head is very large, as in the subgenus *Pelidnotidia*, which distinguishes the genus readily from *Plusiotina* defined below; the species known to me are the following:

Elytra each with four broadly impressed lines of polished, nickel-like metallic lustre. Body oblong-oval, strongly convex, pale but rather dull green in color above, beneath and throughout the legs, the periphery of the pronotum polished and more golden-green, the pronotal surface with a polished area of brighter green at each side medially; elytral side margins metallic like the grooves; each abdominal segment with the hind margin very bright yellowish-silvery metallic; head fully half as wide as the prothorax, rather finely but strongly, the clypeus closely, punctate, the latter parabolic, feebly concave peripherally; antennæ testaceous-brown, the basal joint metallic green, the club (♀) barely longer than the preceding six joints; prothorax twice as wide as long, convex, broadly lobed at base, the sides broadly subangulate behind the middle, the apical angles only moderately prominent, the ambient bead thick and strong throughout, broader and flatter toward the middle at apex; punctures everywhere fine, very feeble and sparse; scutellum polished, metallic, dull toward the middle of the base; elytra barely a fifth longer than wide, evidently wider than the prothorax, parallel, with feebly arcuate sides and very obtusely rounded apex, the lateral margins not thickened basally; punctures obsolete, except in fine series near the sides and basally toward the scutellum; pygidium with very small and feeble sparse punctures, also slightly scratched along the basal margin or sometimes nearly throughout; mesosternal process rather small and acute, the prosternal post-coxal well developed. Length (♀) 25.7–26.5 mm.; width 13.2–14.0 mm. Arizona. Four examples, the male not at hand. Said by Mr. Wenzel to occur also in the mountains near the Great Bend of the Rio Grande in Texas.
gloriosa Lec.

Elytra even in surface, without trace of impressed vittæ metallic or otherwise 2

2—Prothorax less transverse, evidently less than twice as wide as long; legs golden-green, the tarsi steel-blue. Body stout, oblong-oval, rather less convex than *gloriosa*, bright green, with more or less suffusion of a golden-green tint, especially at the elytral margins, tibiæ, on the clypeus and at the apices of the abdominal segments; lustre slightly alutaceous or somewhat sericeous; head fully half as wide as the prothorax, subopaque, densely green, the punctures deep and very close, sparser basally, the interspaces everywhere with very minute close punctulation; clypeus broadly parabolic, the surface feebly concave toward the finely and feebly reflexed periphery throughout; eyes notably small, not at all prominent; antennæ very

dark castaneous, the basal joint metallic green; prothorax subparallel, widest at the middle, with very evenly rounded sides from base to apex, the ambient bead strong but obsolete toward the middle of the apex; surface finely, sparsely punctate, more strongly toward the sides, the interspaces with a system of close and feebly impressed though not very minute punctulation; scutellum wider than long, sparsely punctate; elytra (♀) somewhat inflated with arcuate sides, gradually narrowed basally, very obtusely rounded at apex, much wider than the prothorax, a fourth longer than wide, the lateral edges narrowly subdeplanate, rather more widely posteriad, the epipleura almost equally wide to the transverse part of the apex, where they abruptly terminate; surface more shining, with fine and barely at all impressed series of small punctures; intervals nearly smooth, except the second and fourth, where the punctures are confused and larger than those of the striæ, more broadly confused on the second interval basally; pygidium transversely, confusedly rugulose, sericeous, shining and smoother apically, the sides beneath impressed along the edges; hairs of the metasternum short, sparse and barely evident. Length (♀) 29.0 mm.; width 16.9 mm. Texas (Davis Mts., Great Bend of the Rio Grande),—H. W. Wenzel. . **woodi** Horn

Prothorax much shorter, fully twice as wide as long or more; legs pearly grayish-violet, the tarsi of nearly the same color as the tibiæ, the femora always paler in tint. 3

3—Female with the broad part of the epipleura extending far behind the middle; thoracic angles rounded, scutellum wider than long. Body very broadly oblong-oval, moderately shining, pale golden-green throughout; head large, three-fifths as wide as the prothorax, with moderate shallow punctures, sparse basally, becoming closer anteriorly and rather dense but ill-defined on the clypeus, which is very broadly rounded and feebly reflexed at apex and more than twice as wide as long, the eyes small; antennæ dark brown, with metallic basal joint; prothorax more than twice as wide as long, the moderately prominent apical angles broadly rounded, the obtuse basal angles similarly rounded; base very broadly and feebly lobed medially, the ambient bead strong and thick laterally, entire at base but very broadly obsolete at apex; punctures rather fine, very feebly impressed and sparse throughout; scutellum ogival, punctured slightly toward base; elytra a fifth longer than wide, much inflated before the middle, with the flanks there becoming distinctly explanate and a third wider than the prothorax; apex circularly rounded; punctures notably strong, confused, sparse, finer and sparser laterally, having a few irregular series basally, the sutural series clearly defined throughout; pygidium sericeous and rugosely sculptured, smoother apically, the impunctate median line tumid, the oblique sides impressed; intermesocoxal tumidity very small and narrow, the prosternal well developed; hind coxæ very large, but little more than twice as wide as long. Length (♀) 31.5 mm.; width 18.0 mm. Arizona (Cochise Co.). . . . . **ampliata** n. sp.

Female with the broader part of the epipleura narrower than in the preceding and not extending distinctly behind the middle; scutellum

similarly ogival but very nearly as long as wide; thoracic angles well defined, not rounded. Body less expanded, the elytra broadly rounded and not so explanate before the middle; head not so large, a little more than half as wide as the prothorax, the punctures similarly disposed but more distinctly defined, the clypeus nearly similar but not so broad; prothorax about twice as wide as long, the sides similarly broadly subequally arcuate and nearly parallel, the apical angles prominent, with their apices well defined, the basal more than right but not more than blunt at tip, the ambient bead similar but not quite so thick; punctures similarly fine and sparse but better defined and stronger and closer antero-laterad; scutellum punctured nearly throughout; elytra a fourth longer than wide, at or before the middle more than two-fifths wider than the prothorax, almost similarly but more finely sculptured; pygidium not so strongly sculptured, the punctureless median line not tumid, the marginal impression similar; epipleura not so wide but similarly rugosely sculptured; intermesocoxal tumidity small and rather acute anteriorly; hind coxæ shorter and more transverse than in *ampliata*. Male differing considerably from the foregoing female, being smaller, with relatively more elongate, more parallel and more evenly though feebly arcuate sides, the pygidium less strongly sculptured, less transverse and with the impressions near the lower margin obsolescent; sixth ventral with a very shallow apical sinus, the coriaceous seventh segment black, the sexual characters exactly as in *Pelidnota*. Length (♂) 25.8, (♀) 29.5–30.0 mm.; width (♂) 14.0, (♀) 16.0–16.8 mm. Arizona. Huachuca Mts. at Garces and an unrecorded place, the latter female differing somewhat from the first in having the eyes relatively a little smaller and less prominent. . **beyeri** Skin.

A—Male somewhat as in the male of *beyeri* but with larger and much more prominent eyes and without a distinctly defined median lobe at the base of the prothorax, the anterior angles of the latter more rounded, the punctures similar but less sparse throughout; elytra more oval and less elongate, about a fourth longer than wide—a third longer than wide in *beyeri*—the sides more rounded, the sculpture similar in general type, the punctures, however, more minute and still sparser; pygidium much more impressed along the oblique sides beneath, about as much as in the female of *beyeri;* antennæ more pallid, very pale red-brown, the basal joint only feebly metallic. Length (♂) 26.7 mm.; width 13.5 mm. Arizona (southern—the exact locality unrecorded),—Levette collection. . . . . **ocularis** n. subsp.

I am inclined to think that, with both sexes at hand, *ocularis* could be shown to be specifically different from *beyeri*, but would suggest the above relationship provisionally. There are evidently a number of distinct species and subspecies of the *woodi* and *beyeri* type in southern Arizona and the neighboring parts of Mexico. The following subspecies seems worthy of definition at this time;

it differs from any of the above species in the long sternal hairs and non-metallic basal joint of the antennæ, among other characters:

*Plusiotis adelaida ssp. pavonacea nov.—Stout, oval, convex, shining, more polished than in the *woodi* or *beyeri* types, rich pale chocolate-brown in color, the head, except the middle of the front and two very large discal spots on the pronotum, each of which is medially prolonged to base and apex, green, each elytron with intervals 1 and 4, the seventh sulcus and the external margin also bright green; entire under surface and legs pale red-brown; head distinctly more than half as wide as the prothorax, the clypeus and depressed median part of the frontal apex strongly and closely punctate, the remainder very finely and sparsely; apex of the clypeus very feebly sinuate medially; prothorax twice as wide as long, with distinct basal lobe and well defined apical angles, the surface smooth and punctureless, rugulose in the marginal gutter, the basal bead becoming feebler medially as a rule; scutellum green, brown along the middle, slightly wider than long, ogival and with feebly arcuate sides, the surface smooth; elytra each with nine rather regular and very shallow striæ of fine, distinct punctures, the seventh larger, broadly impressed, sulciform and tinged with green, the third and fourth, inclosing the green discal vitta, also a little stronger than the others; pygidium pale coppery-brown, finely and sparsely punctate; intermesocoxal process rather well developed. Length (♀) 26.8–29.3 mm.; width 14.8–15.5 mm. Mexico (Guerrero),—Baron.

This form differs from *adelaida* Hope, of which *ornatissima* Sturm is virtually synonymical, not only in color but in the very shallow clypeal sinuation, the apex in *adelaida* being, according to Burmeister, "tief eingeschnitten"; the elytral intervals in the latter species are also said to be "gewölbt"; in *pavonacea* they are very feebly and broadly convex, some of them in fact nearly flat.

Plusiotina n. gen.

The general characters in this genus are very much as in *Plusiotis*, but the habitus is quite different, because of the small head, with relatively larger eyes, and more narrowly cylindric-oval body, with well impressed and subequal elytral striation. In addition it should be said that the anterior thoracic angles are very much less prominent, the ambient beading uninterrupted at the thoracic apex, the mandibles more sinuate externally and the intermesocoxal process much reduced, in fact almost vestigial. The basal joint of the antennæ is never metallic and the sterna are clothed with long hairs. The species are moderately numerous, those in my collection being the following:

Prothorax distinctly less than twice as wide as long in both sexes, the sides converging almost evenly from base to apex and feebly, subevenly arcuate, except in *subenodis*.....2

Prothorax much shorter, more than twice as wide as long in both sexes, the sides becoming gradually more parallel in about basal half...5

2—Body larger in size than *Plusiotis gloriosa*, polished, the head and pronotum more obscure, piceous-green, the elytra brighter though rather dark green; under surface, legs and pygidium dark testaceous, with more or less green lustre, nearly wanting on the legs, the metasternum more bluish; head barely more than a third as wide as the prothorax, the eyes separated by less than four times their width, the surface behind a line through the middle of the eyes extremely minutely and remotely punctulate, before that line and throughout the clypeus coarsely, deeply and confluently punctate, the clypeus trapezoidal, with arcuate sides and arcuato-truncate reflexed apex, twice as wide as long, nearly flat, the suture obsolete only medially; antennæ testaceous, the club much shorter than the stem; prothorax convex, shallowly sinuate at apex, which is but little more than half as wide as the base, the basal lobe distinct; basal angles broadly, the apical more narrowly, rounded; marginal bead thin, much elevated apically; surface very finely and remotely punctate throughout; scutellum wider than long, ogival, obscure subcupreous and finely sparsely punctate, well developed in size and notably larger than in the other species; elytra oblong, a fourth longer than wide, nearly a fourth wider than the prothorax, parallel, with broadly arcuate sides, rapidly obtusely rounded at apex, the striæ of deep punctures deeply impressed internally and externally, but more feebly between the humeral and apical umbones; second interval with some coarse scattered punctures; pygidium sericeous, with rather fine irregular, transversely interlacing lines, which are not at all dense, the surface smooth and finely, remotely punctured toward tip; metasternum punctured throughout, sparsely mediad. Length (♀) 26.0 mm.; width 14.0 mm. Mexico (Colonia Garcia, Sierra Madre Mts., Chihuahua),—Townsend.....***æruginis** n. sp.

Body much smaller in size than in *Plusiotis gloriosa*, polished as in the preceding and all the other species; scutellum smaller.....3

3—Last joint of the maxillary palpi (♂) with a large deep excavation almost throughout its length. Form oblong-oval, moderately convex, verdigris-green throughout above, testaceous beneath, the sterna pale blue, the abdomen and legs with strong cupreo-æneous lustre, the pygidium bright shining green, paler than the elytra; head very small, the eyes separated by three and one-half times their width, feebly convex, more or less finely, sparsely punctate throughout, the clypeus more strongly and closely, unusually short, much more than twice as wide as long, rounded, the apex distinctly reflexed; antennal club almost as long as the stem; prothorax narrowing more rapidly anteriorly than posteriorly, the sides almost parallel in basal three-fifths, the base broadly and strongly lobed, all the angles distinctly defined, not more than blunt; surface everywhere minutely, remotely punctate; scutellum smooth, irregularly punctured near the

edges; elytra a fourth longer than wide and a fourth wider than the prothorax, the sides parallel and feebly arcuate; apex rapidly obtusely rounded; surface with the punctured striæ deeply impressed internally but very feeble throughout externally, the second interval without coarse punctures; pygidium pearly in lustre, minutely, remotely punctate, slightly strigilate toward base, not very convex. Male with the hind margin of the last ventral rather abruptly deflexed along the shallow sinus. Length (♂) 20.5–21.7 mm.; width 11.0–12.0 mm. Mexico (Durango).....***subenodis** n. sp.

Last joint of the maxillary palpi (♂) with a large chagrined area, which is very shallowly impressed, or never deeply concave.....4

4—Male with the clypeal suture rectilinear and transverse, obsolescent only medially, the clypeal apex with a small acute medial sinus in the type; eyes less developed, separated by rather more than three times their width. Body more elongate and cylindric, pale and somewhat brassy-green and rather shining above, the clypeus cupreus; entire under surface, legs and pygidium dark testaceous, with brilliant pale cupreous lustre, the hind coxæ more silvery, the metasternum bluish only antero-medially; head barely two-fifths as wide as the prothorax, the clypeus strongly, irregularly and closely punctate, twice as wide as long, parabolic, with the contour slightly reflexed, more strongly at apex; prothorax scarcely three-fifths wider than long, the sides evenly and moderately converging and broadly arcuate from base to apex, the short apical angles very blunt, the basal rounded; basal lobe distinct; punctures minute and remote, more distinct and closer near the sides; scutellum much wider than long, ogival, scabrous in a line paralleling the edges, elsewhere finely, sparsely punctate; elytra barely wider than the prothorax, nearly a third longer than wide, parallel, with feebly arcuate sides, rapidly very obtusely rounded at apex, the impressed, distinctly and closely punctate striæ becoming very shallow laterad; second interval with very few moderate punctures in single line; pygidium very shining but somewhat pearly, sparsely and transversely scratched basally, sparsely punctate apically, the median line feebly tumescent; sixth ventral abruptly deflexed along the shallow sinus. Length (♂) 20.7 mm.; width 11.0 mm. Arizona (Cochise Co.).**angusta** n. sp.

Male with the clypeal suture broadly arcuate, obsolete except laterally but readily traceable by the sculpture, the apex obtusely rounded and subtruncate; eyes larger and more prominent, separated by two and one-half times their width. Body less elongate though rather more so than in *lecontei*, colored as in the preceding but deeper and purer green above and except that the entire metasternum is blue, the hind coxæ more shining, greenish; clypeus shorter, more trapezoidal, almost similarly punctate; prothorax nearly similar but fully three-fourths wider than long and with the feebly arcuate sides more converging from base to apex, all the angles better defined and not more than roundly blunt at their apices, the sculpture similar; scutellum much less transverse and more evenly punctate near the edges; elytra similar in outline but shorter, not more than a fourth longer than wide, the striæ internally rather deeply impressed and

more strongly punctate than in the preceding, similarly feebly so laterad; pygidium greenish and not cupreous, similarly feebly sculptured and convex but never with trace of a tumescent median line; legs sometimes with more or less bluish lustre along the lower part of the femora and tibiæ, the sixth ventral similar. Female much larger than the male, the prothorax much narrower than the elytra, three-fourths wider than long, the sides similarly converging and arcuate throughout; clypeal suture defined almost throughout by slight tumescence, the clypeus almost as in the male; eyes much less prominent, separated by about four times their width; elytra nearly similar but a little more arcuate at the sides; pygidium less convex, slightly less feebly sculptured and more impressed along the lower lateral margins. Length (♂) 18.7–21.0, (♀) 22.5 mm.; width (♂) 10.0–11.0, (♀) 12.4 mm Mexico (Colonia Garcia, Sierra Madre Mts., Chihuahua),—Townsend. One female and six males.

***sonorica** n. sp.

5—Male of shorter broader form than in either of the preceding, rather bright pure green in color above, the clypeus coppery; under surface and pygidium colored nearly as in *sonorica*, but with the tarsi darker, blackish and without evident metallic lustre; head nearly similar throughout, the eyes a little more separated and the broadly, subcircularly rounded clypeus rather more narrowed at apex, similarly reflexed; last palpal joint with the opaque impression similarly shallow; prothorax much shorter, twice as wide as long, the sides broadly arcuate, becoming subparallel posteriorly and more convergent apically, the apical angles very short though rather well defined, the basal narrowly rounded, the outline and sculpture nearly as in the preceding species, but with the basal lobe broader and much less definite; scutellum nearly as in *sonorica*, the elytra parallel, with feebly arcuate sides and rapidly very obtusely rounded apex, about a fifth longer than wide and rather evidently wider than the prothorax, the sculpture nearly similar; pygidium shining, pearly greenish-coppery, almost similarly feebly sculptured, the median line not tumescent, the sixth ventral nearly similar. Female much larger than the male but similarly stout, the head relatively still smaller, with the less prominent eyes separated by nearly four times their width; prothorax fully twice as wide as long and only a little narrower than the elytra, as in the male, the sides evenly and rather strongly arcuate, somewhat converging toward base and much more strongly anteriad, the scupture as in the male; elytra a little larger and somewhat more elongate, similar otherwise, the pygidium less convex but not otherwise differing. Length (♂) 18.0–21.0, (♀) 24.0 mm.; width (♂) 10.0–12.2, (♀) 13.0 mm. Arizona (Grand Cañon of the Colorado) and New Mexico (Fort Wingate). One female and five males. [*Plusiotis lecontei* Horn] . . . . . **lecontei** Horn

The Mexican *Plusiotis chalcothea*, *orizabæ* and *alticola*, will also have to be referred to the present genus, although in *alticola* the head becomes a little larger than usual in *Plusiotina*, but with the

characteristically prominent eyes of the male. *Lecontei* occupies the more northern geographic range of the genus and is somewhat isolated geographically from the more southern forms by the mountainous regions of central Arizona. The larger scutellum of *æruginis* is a rather notable character of that species and, throughout the genus, the clypeal suture comes nearer to revealing itself in its entirety than it does in *Plusiotis*.

Cotalpa Burm.

We come here upon a rather radically different generic type from those which precede, due to the strongly marked transverse clypeal suture, constituting the principal special mark of the group "Areodides" of Lacordaire, and this, together with the entire basal marginal bead of the pronotum, truncate clypeal apex, small scutellum and rounded external contour of the mandibles, serves to distinguish the genus from nearly all the others of the tribe Rutelini. In addition, it may be added that the body is rounded-oval to oblong-oval in form, of more or less pallid coloration above, the head and pronotum with faintly pearly metallic lustre and the elytral punctures only in part serial. The under surface is generally hairy, sometimes conspicuously so, and the larger claw of all the tarsi is unequally split at apex in the male, but simple in the female. The statement made by Lacordaire that the last joint of the tarsi is not dentate beneath is misleading, the anterior is sometimes feebly, the posterior always strongly, dentate. The elytra are never metallic in lustre and are always distinctly and often strongly punctured. The head is generally larger in the female than in the male. This genus is confined to the colder parts of North America, excepting the Pacific coast, but the genus *Pocalta*, hitherto confounded with *Cotalpa*, occurs almost solely on the Pacific coast and thence as far to the southward as Guatemala. The known species of *Cotalpa* are as follows:

Basal thoracic bead strong, equal and entire from side to side; legs moderate 2

Basal bead narrowly but completely interrupted at the middle; legs stouter; head very small. 7

2—Head small, never more than half as wide as the prothorax; mandibles without inferior tooth within. 3

Head larger, half as wide as the prothorax or more; body more oblong-elongate; mandibles with an acute tooth within, projecting downward from the under surface. Sonoran. 6

3—Head equal in size in the two sexes.....4
Head much larger in the female than in the male.....5

4—Elytra with the punctures relatively coarse and notably close-set; head very small. Form oval, convex, pale flavate, with thin pearly metallic lustre, the elytra still paler and more whitish, as usual without trace of metallic lustre; under surface blackish, with green lustre and plentifully albido-pubescent, the legs pale but more or less metallic, the tarsi darker; head barely more than a third as wide as the prothorax, loosely scabrous, sparsely punctate basally; clypeus twice as wide as long, of the usual form but with the apex rather strongly reflexed; prothorax as in *lanigera* but with the fine scabrous lateral punctulation much denser; anterior angles very short and obtuse; elytra oval, convex, nearly similar in the sexes, somewhat more impressed and laterally swollen near basal third in the female, a little longer than wide and distinctly wider than the prothorax, the punctures generally confused and with intermingled small punctulation, but with two distinctly defined geminate series on each; pygidium sparsely hairy and feebly sculptured. Length (♂ ♀) 16.3–19.0 mm.; width 10.2–11.8 mm. Kansas (Medora),—Knaus. Five males and five females.....**subcribrata** Wick.

Elytra with the punctures distinct and often strong but always widely separated; body larger in size, with the head not so small. Form oval, convex, similar in coloration and lustre to the preceding, except that the elytra are nearly similar in color to the head and pronotum, though without metallic lustre and having seldom any trace of the very pallid whitish tint characterizing *subcribrata;* head but little less than half as wide as the prothorax in either sex, finely and sparsely punctulate throughout, the clypeus somewhat less shining, rather more than twice as wide as long, with very broadly rounded angles, the apex somewhat less strongly reflexed than in the preceding; antennal club (♂) shorter than the preceding six joints, only very little smaller in the female; prothorax more than twice as wide as long, polished and with pellucid metallic lustre, the angles more or less rounded; punctures minute and sparse, more distinct though very sparse laterally and sometimes having there some feeble, closer punctulation; scutellum wider than long, ogival, with rounded sides, almost smooth; elytra oval, less obtusely rounded behind than in the preceding, distinctly longer than wide and much wider than the prothorax, the lateral impression and swelling of the sides but little more pronounced in the female; punctures sparsely confused but, in the median parts of each, three or four equally spaced and nearly regular unimpressed series can be distinguished; pygidium pale to blackish, with green lustre, feebly sculptured and sparsely hairy; intermesocoxal prominence very small, polished; under surface blackish, moderately metallic, with dense fine, whitish pile, shorter and sparser on the abdomen; legs moderate, pale, with metallic lustre, the tarsi also pale and not blackish as in the preceding. Length (♂ ♀) 17.5–21.0 mm.; width 11.0–12.7 mm. New York and New Jersey. Abundant. [*Scarabæus lanigerus* Linn.]
lanigera Linn.

A—Similar to *lanigera* but much larger and generally of somewhat darker luteo-flavate coloration above, the pubescence beneath nearly similar; clypeus rather less transverse; prothorax similar but not quite so abbreviated; scutellum not so transverse; elytra nearly as in *lanigera* but with the three or four medio-discal lines of punctures less definite or replaced by two more or less distinct geminate series, somewhat as in *subcribrata*. Length (♂ ♀) 21.5–24.5 mm.; width 12.5–15.0 mm. Indiana, Iowa and Wisconsin. Eleven examples..... **obesa** n. subsp.

5—Form oblong, the female more oval, convex, shining, pale flavate-brown in color above, the anterior parts with but very feeble metallic glint, the under surface and legs nearly as in *lanigera*, except that the tarsi are black or nearly so, with the usual metallic lustre, the pubescence nearly similar; bead (♂) very small, barely two-fifths as wide as the prothorax, or (♀) nearly half as wide as the latter, the clypeus twice as wide as long or a little less, the apex arcuato-truncate and reflexed, with moderately rounded angles, the surface rather strongly but loosely punctate; prothorax not qiute twice as wide as long, widest behind the middle, the apex moderately sinuate, with short rounded angles, the basal angles narrowly rounded; surface nearly as in *lanigera;* scutellum more narrowly ogival; elytra (♂) barely at all longer than wide, parallel, with broadly arcuate sides, broadly, obtusely rounded at apex, the lateral impression as in *lanigera*, but the longitudinal impression thence posteriorly is barely traceable, the punctures fine and sparse, the median part of each elytron having two very feebly defined geminate series, or (♀) distinctly longer than wide, oval, much less obtuse at apex and with the sides obtusely prominent near basal third; pygidium in both sexes differing decidedly in being minutely and densely rugulose and alutaceous throughout. Length (♂) 18.6–19.6, (♀) 20.5 mm.; width (♂) 11.0–11.5, (♀) 12.2 mm. Louisiana (Vowell's Mill). **molaris** n. sp.

Form very broadly rounded, very shining and pale brown throughout above, the elytra sometimes more flavate; under surface and legs nearly as in *lanigera;* head (♂) notably smaller, sparsely punctured throughout, the clypeus browner and without lustre, arcuato-truncate, with very broadly rounded angles; prothorax shorter, much more than twice as wide as long, the sides more strongly converging anteriorly from a point nearer the base, the basal angles more rounded; surface similarly punctulate; scutellum not quite so broadly ogival; elytra barely visibly longer than wide, very obtuse at apex, not very much wider than the prothorax, the parallel sides moderately arcuate, the lateral impressions as in *lanigera;* punctures fine and everywhere very sparse, the punctulation of the interspaces extremely sparse and minute; toward the middle of each, two very feeble and widely separated irregular double series are more or less evident; pygidium nearly as in *lanigera* but more convex; under surface similarly colored and pubescent. Female still more rotund, the elytra one-half wider than the prothorax, fully as wide as long, with strongly rounded sides, which are barely visibly more prominent

near basal third; head larger, fully one-half as wide as the prothorax; pygidium nearly as in the male but not quite so convex. Length (♂) 19.5, (♀) 20.6 mm.; width (♂) 12.4, (♀) 13.5 mm. Virginia and New York (Peekskill).....**vernicata** n. sp.

6—Body oblong-oval, more elongate than in any of the preceding, convex, shining, dark red-brown to pale ochreous-yellow above, the anterior parts with feeble metallic lustre, black, with greenish lustre and with plentiful gray pubescence beneath, the legs pale, with black tarsi; head large, distinctly more than half as wide as the prothorax, the eyes relatively small as usual; clypeus as in the preceding species but more sinuato-truncate apically, with broadly rounded angles and sides which diverge perceptibly thence to the base, the finely reflexed periphery and the transverse suture finely black; mentum with the posteriorly converging anterior ridges better developed than in the preceding species; prothorax nearly as in *lanigera* in form and sculpture but with better defined and rather more prominent apical, and much more broadly rounded basal, angles; elytra a fourth to fifth longer than wide, slightly wider than the prothorax, parallel, with feebly arcuate sides, which are more inflated, subprominent and discally tumid near basal third in the female, the apex moderately obtuse; punctures fine, well separated, confused but with two double series on each generally well defined; lateral impressions nearly as in *lanigera*; pygidium yellow, peripherally black, the fine sparse punctures bearing short erect hairs, the ground minutely rugulose and alutaceous; intermesocoxal tubercle shining, small. Length (♂♀) 18.0–22.0 mm.; width 10.0–12.3 mm. Arizona. Abundant.....**consobrina** Horn

7—Form oblong-oval, pale brownish-flavate above, without a trace of the anterior metallic opalescence of all the preceding species, the under surface shining, black, without metallic lustre; legs pale testaceous, the tarsi deep shining black; inferior pubescence less plentiful than in *lanigera*, still sparser on the abdomen than in that species, except at the sides; head notably small, barely two-fifths as wide as the prothorax, nearly as in *lanigera*, except that the angles of the clypeus are still more broadly rounded and the thin elevated black margin ends abruptly at a greater distance from the base; mandibles similarly very thin and lamellate as in *lanigera*, without the inferior tooth of *consobrina;* prothorax of a different outline, less than twice as wide as long, widest behind the middle, where the sides are a little more rounded, thence much narrowed to the apical angles, which are short and rounded, the basal obtuse and rounded; base broadly rounded, the lobe barely at all indicated; surface minutely and remotely punctulate, the punctules becoming more visible and in part densely confluent near the sides; just within the edge posteriorly, there is an evident parallel impression; scutellum broadly ogival, nearly smooth, black along the apex; elytra barely visibly longer than wide, oblong, nearly one-half wider than the prothorax, very obtusely rounded at tip, the parallel sides broadly and evenly arcuate; lateral impressions broad and shallow, not prolonged posteriorly; punctures fine, sparse and confused, with the usual two double lines evident;

pygidium smooth, minutely, sparsely punctulate, glabrous; mesosternal tubercle small but strong; legs very stout, especially the posterior, the tarsi long and notably stout. Length (♂) 20.5–24.0 mm.; width 12.5–14.3 mm. Utah (Green River)..**flavida** Horn

The upper ramus at the tip of the larger claw of the male tarsi, in the last two species of the table is exceedingly small, and is generally worn off, so that only an irregularity forming the base of the ramus remains visible. In *consobrina* there seems to be an unusual amount of variability, and of the two extreme males before us, one is very stout, with the broad head strongly sculptured, and the other more narrowly oval, with much reduced prothorax; these would seem to be at least subspecifically different, but it would require large and carefully collected series to define such related forms. Prof. Wickham indicates (Journ. N. Y. Ent. Soc., 1905, p. 2) a form which he defines as a variety of *lanigera;* it is described from a unique example in the collection of the late Mr. Chas. Fuchs and may be outlined as follows:

General characters as in *lanigera* but with the metallic lustre of the head and pronotum more pronounced, the latter broadly brownish at the sides; elytra ornamented by a common brown sutural stripe, extending the entire length, narrower at apex and extending along the basal margins to the humeri, where it is recurved. Arizona (Prescott).....**tau** Wick.

It is to be regretted that the author did not search more carefully for additional characters, for if the type is in reality from central Arizona, it is different specifically from *lanigera* without any doubt whatever. However, the peculiar coloration will enable one to recognize it if rediscovered.

The subspecific form indicated above under the name *obesa*, appears to be well differentiated from *lanigera* when viewed in series, and is another instance of divergence in development of a stem form on the opposite slopes of the Appalachian system. This peculiarity has also been noticed by Mr. Leng and others.

The resemblance of *Cotalpa* to the Brazilian *Areoda* is very marked as to general habitus.

Pocalta n. gen.

The smaller and in part strongly metallic species, hitherto regarded as a section of *Cotalpa*, have the upper surface of the body

pubescent, as well as the lower, very coarse thoracic and cephalic sculpture, complete absence of the apical and basal marginal bead of the pronotum except at the sides, a very different and semicircular form of clypeus, still narrower and less conspicuous intermesocoxal tubercle and an almost completely obsolete cleft in the apex of the larger male tarsal claws; they present an entirely different habitus from *Cotalpa* in almost every way and obviously demand separation as a distinct generic type. In addition, it should be stated that, excepting a slight overlapping in the upper Sonoran region, the rather numerous species occupy a geographic field, altogether different from that of *Cotalpa*, they being native to the Pacific provinces, from Washington State and Utah southward to Guatemala. They form in fact our only Pacific representative of the extensive subfamily Rutelinæ, which, in some genus or other, is almost completely cosmopolitan. This absence of the Rutelinæ from the rich and varied fauna of California is very remarkable, for even these species of *Pocalta* are to be found only in the semi-Sonoran parts of the Pacific regions and I have no record of their occurrence in the coast mountains anywhere north of Santa Barbara. California is also exceedingly poor in Dynastinæ and Cetoniinæ as well, excepting a few Cyclocephalids and the genus *Cremastocheilus*, facts which are still more unaccountable. The species of *Pocalta* occurring north of the Mexican boundary, may be known as follows:

Legs testaceous, with barely visible metallic lustre, the tarsi more obscure. Body stout, oblong-oval, convex, shining, black, the anterior parts above, scutellum and entire under surface with bright green metallic lustre; pubescence cinereous, long, erect and bristling throughout above, nowhere dense and easily removed, denser and finer on the under surface, sparser on the abdomen; head half as wide as the prothorax, densely and strongly punctate, the clypeus semicircular, flat, with feebly and finely reflexed edges, testaceous in color and without metallic lustre, the periphery finely black; prothorax less than twice as wide as long, widest at the middle, where the sides are strongly arcuate, gradually less so and equally converging to base and apex, the apical angles prominent and sharp, much more so than in any *Cotalpa*, the basal obtuse and slightly rounded; lateral bead fine and thin, the basal thicker, broadly obsolete medially; punctures very coarse, uneven and irregularly rather close or partially confluent, much smaller near the sides; scutellum ogival, with a few widely scattered coarse punctures; elytra much wider than the prothorax, very obtuse at apex, tawny to paler, flavate, sometimes more or less nubilously streaked with brownish and with a few fine,

feebly impressed lines, finely, very remotely punctate, coarsely and more closely though shallowly so toward the suture, especially basally; punctures bearing the long erect hairs somewhat asperulate; pygidium shining green, finely, feebly rugulose and with fine scattered subasperate punctules; mentum broadly concave anteriorly, with the apex deeply sinuate. Length (♀) 17.0–19.0 mm.; width 10.0–11.7 mm. Arizona and New Mexico. [*Cotalpa puncticollis* Lec.] **puncticollis** Lec.

Legs black, with faint bluish lustre, the entire tibiæ constantly dark rufotestaceous. Body short, obese, convex, moderately shining, blue-black, deeper black beneath, the elytra dark brownish-rufous; head densely and strongly punctate, the punctures becoming smaller and rather sparse basally, the clypeus flat, with slightly reflexed edges, thickened apically, semi-elliptic and more than twice as wide as long (♀), or semicircular and less transverse (♂); prothorax in outline throughout almost as in the preceding, the punctures coarse but not very deep, well separated, not so coarse as in *puncticoilis* and not differing much in size or character toward the sides, the erect pale hairs coarse, not dense; scutellum ogival, as long as wide, sparsely, strongly punctate; elytra as wide as long to barely longer, a third to fourth (♀), or but very little (♂), wider than the prothorax, more circularly and less obtusely rounded at apex than in the preceding, the punctures fine though not very sparse, not differing suturally, the two double series generally indistinct, more evident and very feebly impressed in the male; erect hairs (♀) not very long, inclined, yellowish-cinereous, plentiful toward the suture but shorter and sparse elsewhere, almost wanting throughout or readily removed in the male; pygidium in both sexes finely, closely and rather strongly rugulose throughout, though shining, dark blue in color like the prothorax. Length (♂♀) 14.0–16.5 mm.; width 8.5–10.4 mm. Southern California. Abundant, the male much less so than the female. [*Cotalpa ursina* Horn]..... **ursina** Horn

Legs entirely black, or at least with the tibiæ never in great part pale..2

2—Pronotal punctures distinctly separated, nearly as in the preceding..3

Pronotal punctures extremely dense and rugosely confluent throughout.9

3—Elytra dark brownish-rufous to tawny flavate in color.....4

Elytra deep black throughout; anterior parts and scutellum bright green.....8

4—Head, pronotum and scutellum dark blue-black, rarely somewhat greenish-black as in *ursina*.....5

Head, pronotum, scutellum and legs very bright green in color.....7

5—Basal bead of the pronotum only narrowly interrupted medially; pygidium smooth and polished, rugulose only toward the lower sides and apex. Body rather narrower in form than in *ursina* and with a distinctly smaller head; femora with feeble greenish lustre, the tibiæ without such lustre except at apex, black, the medial region extremely feebly and just visibly pallescent; elytra dark red-brown, with the pubescence (♂) sparse and easily lost; head less than half as wide as the prothorax, otherwise nearly as in the male of *ursina*, except that the deep black clypeus is shorter and with relatively coarser

sculpture toward the sides; prothorax much smaller in the male, not more than three-fourths as wide as the elytra, four-fifths wider than long, nearly as in *ursina* (♂), except that the converging sides basally are not subsinuate but rounded and the obtuse basal angles much more rounded; elytra subquadrate, as wide as long, with rounded parallel sides and broadly, obtusely rounded apex, the sculpture nearly as in *ursina*, the flanks below the humeri similarly impressed; pygidium convex, very shining, with scattered fine punctures becoming slightly coarser laterally. Length (♂) 14.5 mm.; width 8.5 mm. Southern California.....**lævicauda** n. sp.

Basal bead of the pronotum but little more widely interrupted medially, the pygidium as usual, finely and unevenly rugulose throughout, though not densely. Color throughout as in *lævicauda* and *ursina*, except that the legs are deep black, polished and devoid of any form of metallic lustre throughout, excepting a feeble blue-black tinge; entire under surface deep and pure black, with long close, very bristling pubescence, that of the upper surface long, plentiful, bristling and conspicuous, close on the medio-basal parts of the elytra but sparse and sublinearly arranged on the lateral parts of the latter, which are deep red-brown in color; head as in *lævicauda* but with the edges of the clypeus evenly and much more strongly reflexed; prothorax not quite twice as wide as long, the parallel sides evenly and strongly arcuate throughout, the basal angles well defined, very obtuse but scarcely at all rounded, the apical right, rather sharp; punctures coarse, well separated, smaller and more confused near the sides, feebly impressed along the median line before the middle; elytra much wider than the prothorax, a little shorter than wide, very obtusely rounded at tip, parallel and broadly arcuate at the sides; surface with rather strong punctures and feeble oblique rugulosity suturally, the three or four impressed discal lines evident and with small asperulate setigerous punctures, also with a series along the lateral edge serrating the edge basally, the ground punctures laterally very fine, sparse; pygidium finely, unevenly rugulose, shining and with long sparse erect hairs; hind tibiæ but slightly enlarged distally. Length (♂) 12.7 mm.; width 7.8 mm. California (Coronado, San Diego Co.)....**brevis** n. sp.

Basal bead of the pronotum only visible in about lateral third; elytra uniform tawny-yellow in color.....6

6—Body stout, convex, shining, herissate above and beneath with long erect bristling ashy hairs, which are sparser and much less conspicuous on the elytra and there principally confined to the medio-basal parts; head more than two-fifths as wide as the prothorax, strongly and densely punctate, less coarsely so and densely rugulose on the clypeus, which is flat, semicircular, with strongly, abruptly and evenly reflexed edges, the rugulosity interspersed with slightly coarser punctures; prothorax well developed but not as broad as in *ursina*, nearly twice as wide as long, widest at the middle, where the sides are obtusely subprominent, thence converging and more broadly arcuate to apex and base, the basal angles very obtuse, slightly rounded, the apical right and well defined; surface with the

rather coarse punctures widely separated throughout, not different near the sides; sparsely punctured scutellum ogival, with the sides more arcuate basally; elytra as long as wide, a third wider than the prothorax, circularly rounded behind about the middle, the sides parallel, broadly arcuate; punctures very fine and sparse, but little more evident suturad, the infra-humeral impression moderate; disk with a few fine impressed lines; pygidium very shining, the rugulosity not very fine and decidedly feeble, mingled as usual with small punctures bearing long erect hairs; legs black, the femora with very feeble greenish lustre. Length (♂) 13.7–15.0 mm.; width 8.7–9.2 mm. California (San Bernardino),—Dunn. Four examples.

rotunda n. sp.

Body more elongate-oval and larger in size, the bristling pubescence fulvescent, not so long or conspicuous on the under surface and, on the elytra, only visible as short erect hairs arranged in four or five very regular longitudinal single lines, the first near the suture; color deep black, the anterior parts above with only the faintest blue-black lustre, the under surface and legs deep black, without trace of metallic lustre; head and clypeus nearly as in the preceding; prothorax relatively rather small, only about three-fourths wider than long, the sides subparallel and almost evenly and strongly rounded; basal angles very obtuse, rounded; punctures coarse, widely separated, but little closer laterally, intermingled with fine sparse punctures, which are not similarly evident in any of the preceding species; elytra oval, slightly longer than wide, two-fifths wider than the prothorax, circularly rounded in about posterior half, the sides slightly prominent near basal third in the female; suture finely brownish; punctures small, sparse, with still smaller punctures sparsely intermingled, the general tendency to linear arrangement rather noticeable; pygidium (♂) finely, closely, or (♀) still more finely, densely and more uniformly, rugulose throughout, slightly shining; last ventral in both sexes more finely and closely punctured as usual. Length (♂♀) 17.0–17.5 mm.; width 10.3–10.6 mm. Southern California (the exact locality unknown). Three examples. . . . . **seriata** n. sp.

7—Form broadly oval, convex, shining; elytra brownish-rufous; under surface and pygidium black, with bright green lustre, the tarsi black, feebly metallic; pubescence long, erect, cinereous, not conspicuous beneath, except at the sides and along the upper femoral edges, moderate anteriorly above and sparse but distinct on the elytra medio-basally and partially subserial in arrangement; head and clypeus both black, with bright green lustre and closely punctate, the punctures perforate and deep, with others smaller and shallow intermingled; clypeus semicircular, non-metallic and strongly reflexed peripherally; prothorax moderate, three-fourths wider than long, widest behind the middle, where the sides are more rounded, gradually converging, feebly arcuate and serrulate thence to the apex; basal angles very obtuse but not much rounded; basal bead only obsolete medially; punctures coarse, well separated, somewhat less coarse near the sides; scutellum coarsely and rather closely

punctured; elytra very nearly as wide as long, circularly rounded behind about the middle, the sides thence converging slightly to the base, fully two-fifths wider than the prothorax; punctures sparse, fine, coarser and obliquely subrugulose suturad; lateral impressions moderate; lateral edge serrulate basally; pygidium shining, finely, irregularly rugulose and with moderate sparse punctures; mentum concave anteriorly. Length (♂) 14.7–15.7 mm.; width 8.7–9.0 mm. California (near San Diego). Three examples.

rubripennis n. sp.

8—Form oblong-oval, more elongate than the preceding, convex, shining, under surface black, with green lustre, the basal parts of the abdominal segments cupreous; legs black, with bright green lustre, the tarsi less metallic; pubescence luteo-cinerous, long, rather coarse, dense on the sterna and parts of the femora, sparser on the abdomen, close and conspicuous on the head and pronotum, sparser, not so long and more reclining on the medio-basal parts of the elytra, almost wanting elsewhere; head densely sculptured, bright green, the clypeus semicircular, deep black, without metallic lustre, the edges well reflexed; eyes even smaller than usual; prothorax relatively larger but throughout nearly as in the preceding, though with coarser pubescence and with the converging sides anteriorly not definitely serrulate; scutellum coarsely, irregularly and much less closely punctured; elytra fully a fifth longer than wide, more rapidly rounding and obtuse in about apical third, only a fourth or fifth wider than the prothorax, the sides parallel and feebly arcuate; punctures fine and sparse but deep and distinct, intermingled with larger and pubiferous punctures medio-basally; lateral impressions deep; humeral angles less rounded than usual; pygidium bright green but only slightly shining, finely but strongly, densely rugulose and closely clothed with long coarse pale hairs; mentum feebly concave anteriorly; abdomen with the punctures closer than in the preceding. Length (♂) 15.7 mm.; width 8.6 mm. Southern California (locality unrecorded).....**nigripennis** n. sp.

9—Body oblong-oval, rather abbreviated and only moderately convex, greenish-blue and not very shining anteriorly, the elytra dark brownish-red and strongly shining; under surface rather shining, green throughout and with the cinerous vestiture very long, dense and conspicuous, only a little sparser on the abdomen; legs black, with dark violet-blue lustre; head and pronotum with the hairs very long, fine, ashy-sericeous, dense and conspicuous, the elytra with only a few erect hairs medio-basally; head densely punctate; clypeus flat, semi-elliptical, with shorter vestiture, greenish in lustre, the periphery abruptly and moderately reflexed; prothorax nearly twice as wide as long, widest at the middle, the sides arcuate, less so and converging apically and basally, the apical angles shorter and blunter than usual, the basal obtuse but not much rounded; base broadly arcuate, the lobe very broad and but feebly differentiated, the bead visible only toward the sides; punctures coarse and very confluent; scutellum green, with moderate, rather close-set punctures, wholly

smooth to minutely punctulate toward tip; elytra very short, quadrate, about as wide as long, rapidly very obtusely rounded in less than apical third, a fourth wider than the prothorax, the parallel sides feebly arcuate; humeri obtuse but distinct; surface with the two discal double lines rather coarsely impressed; punctures coarse but feebly impressed almost throughout the broad second interval, elsewhere smaller though not very fine, sparse and feebly impressed, the general surface somewhat rugose but not at all conspicuously; lateral impressions rather shallow and linear; pygidium green, rather shining, loosely rugulose and with long, erect and plentiful pubescence; mentum concave anteriorly as usual in the genus; legs rather slender. Length (♂) 13.6–14.8 mm.; width 8.2–8.6 mm. Utah (Stockton). Three examples..... **pubicollis** n. sp.

Body larger and more elongate-oval, more convex; coloration throughout similar, except that the anterior parts above are pure green in lustre and not blue, though, rarely, the pronotum becomes bluish toward the sides, differing principally in the coarser, less silky vestiture, the long hairs covering the entire elytra conspicuously in the female, but restricted more to the inner parts in the male; the surface externally becoming almost glabrous; head densely punctate, the semicircular clypeus finely and feebly reflexed peripherally, flat, deep black (♀) or green (♂), always with much shorter pubescence than the other parts; prothorax twice as wide as long, nearly as in the preceding but more narrowed and more deeply sinuate at apex, the erect hairs less dense and less white; scutellum punctured throughout; elytra distinctly longer than wide, fully a third wider than the prothorax, more oval, circularly rounded in about apical half, the parallel sides broadly rounded; punctures everywhere coarse and rather deeply impressed, not differing internally except that they are less sparse toward the suture than externally, the two geminate lines more coarsely and deeply impressed in the male than in the female; pygidium green to bluish, loosely but rather sharply rugulose and with long abundant hairs throughout; legs blue-black; abdominal punctures strong and close-set, shining; mesosternal process narrow and feebly developed. Length (♂ ♀) 13.5–17.5 mm.; width 8.0–10.3 mm. Utah to Oregon (Buck Mountain). Common. [*Cotalpa granicollis* Hald.]..... **granicollis** Hald.

The smaller measurements under *granicollis* refer to an exceptionally small female example; the species differs greatly from *pubicollis* in the character of the pubescence, in the less abbreviated prothorax and longer, more apically rounded, more pubescent and much more coarsely punctured elytra.

In the genus *Pocalta*, the head is notably small throughout and the elytral pubescence is always sparser and more restricted to the medio-basal parts in the male, than in the female. The mandibles are flat and lamellate and have no trace of a tooth projecting from the lower surface, occasionally evident in *Cotalpa*.

Parareoda n. gen.

In general characters the type of this genus is allied rather closely to *Cotalpa* and *Byrsopolis*, but it differs from both in the triangular and obtusely pointed clypeus. The upper surface is glabrous, the under surface clothed very densely with long brown pubescence, shorter and sparser on the abdomen, and the pygidium is clothed not densely with short and very stiff hairs. The basal bead of the pronotum is interrupted medially and the mesosternal process is obsolete, the coxæ being very approximate; the prosternal process is short and abruptly much curved forward at tip. The mentum is concave anteriorly, the mandibles broadly rounded externally and reflexed, not dentate internally; eyes small, the anterior canthus with a very dense brush of stiff setæ. The sculpture of the upper surface is much coarser than in *Cotalpa* but the pronotal punctures are correspondingly less coarse than in *Pocalta*, the elytral sculpture coarser than in either. From *Byrsopolis*, the genus differs in the anteriorly angulate form of the clypeus, very feebly, evenly arcuate and not notably flexuous clypeal suture and invisible mesosternal process. The antennal club in *Byrsopolis* is notably long, being as long as the basal width of the clypeus in *castanea* Burm., the Brazilian type species. The type of *Parareoda*, with which I associate also the recently described *Byrsopolis arizonæ* of Ohaus, may be defined as follows:

Form oblong-elongate, convex, shining, castaneous in color throughout, without trace of metallic reflection at any part, the legs concolorous; upper surface glabrous, the metanotum however with a dense fringe of brown hairs, which is very conspicuous medially, attaining the base of the scutellum; head barely two-fifths as wide as the prothorax, coarsely, deeply and confluently punctate throughout, the clypeus flat, less than one-half wider than long, triangular, with nearly straight sides, which are finely and barely at all reflexed, the apex bluntly rounded and feebly reflexed; antennal club (♀) much shorter than the stem as in *Cotalpa;* prothorax a little less than twice as wide as long, strongly convex, the sides viewed from above broadly, subevenly arcuate, becoming subparallel in about basal half, strongly converging apically to the well defined and subacute angles, the basal angles slightly obtuse and narrowly rounded; base broadly, feebly lobed, the marginal bead rather thin, reflexed, elevated, broadly obsolete medio-basally, the apical bead, only visible near the sides; surface strongly, sparsely and unevenly punctate, densely anteriorly and very confluently near the sides; median line finely subimpressed anteriorly; scutellum ogival, shorter than wide,

glabrous, with scattered moderate punctures, those at base bearing a very few short stiff hairs; elytra large, a fourth or fifth wider than the prothorax, more than a fourth longer than wide, circularly rounded in about apical two-fifths, the sides thence converging slightly and nearly straight to the base; surface even in coloration, with the two outer slightly impressed double series of punctures regular, the inner double series indistinct, confused with the coarse diffused punctuation of the disk suturad, there also becoming somewhat rugulose; externally, the punctures become much smaller and sparse; the infrahumeral impression of *Catalpa* is obsolete, the fine reflexed lateral edges even; pygidium with small scattered asperate setigerous punctures, almost evenly distributed throughout, and some feeble loose rugulosity, the color somewhat more obscure broadly at the middle; abdomen with strong asperulate punctuation, wanting toward the bases of the segments; legs moderate, roughly sculptured, the hind tarsi slender, scarcely more than two-thirds as long as the tibiæ. Length (♀) 29.0 mm.; width 15.5 mm. Arizona (Huachuca Mts.).....**rufobrunnea** n. sp.

Form slightly stouter, oblong-ovate, rather convex, somewhat inflated behind, rufo-castaneous, rather shining, the lustre of the head and pronotum slightly cuprascent; elytra narrowly infuscate at the margins; under surface densely pubescent; clypeus trapezoidal, with strongly oblique and anteriorly feebly arcuate sides, the angles rounded, the apex not reflexed, the margins very feebly thickened, the surface, as also that of the head, strongly and closely punctate, with finer punctures intermingled; prothorax at base almost twice as wide as long, the sides angularly prominent at the middle, the obtuse hind angles not rounded; base scarcely lobed, the basal bead not interrupted; surface throughout coarsely, almost confluently punctate, with very fine punctures intermingled, having a feeble canaliculation along the middle and, near this anteriorly, a feeble impression; scutellum wider than long, thickly arcuato-punctate, the margins black; elytra with a mixture of coarse and fine punctures, the double series distinct; pygidium with a fine impression along the middle, sparsely punctate and almost glabrous medially, densely and rugosely punctured and hairy laterally. Length 28–31 mm.; width 16–17 mm. Arizona. Three female examples in the Berlin Museum. [*Byrsopolis arizonæ* Ohaus].....**arizonæ** Ohaus

Arizonæ, which until reading the original description I had held to be the same as *rufobrunnea*, differs from the latter in many features. In *rufobrunnea*, the punctures of the head and clypeus, for example, are very densely crowded and without intermingled finer punctures, the punctures of the pronotum moderate and widely separated, except apically and near the sides, and its surface is without trace of metallic glint; there are also differences in the sculpture of the elytra and pronotum, the punctures of the former being subuniform and not mingled with finer punctures, and the

pygidium is uniformly punctured, loosely pubescent throughout and without median impression. The absence of the male prevents me from recording the length of the antennal club in that sex of *rufobrunnea;* in the female, at any rate, it does not differ sensibly in form or proportion from that of *Cotalpa*.

The genus *Areoda* MacL. is more closely allied to *Cotalpa* than it is to *Parareoda*, having the antero-lateral elytral impression almost similar and the sculpture of the upper surface almost identical, but the base of the prothorax is abruptly lobed medially and the hind angles are very broadly rounded; the head and clypeus are nearly similar, but the eyes are more developed; the intermesocoxal process is much larger and is anteriorly protuberant. In view of the close general similarity in habitus between *Phalangogonia* and *Cotalpa*, I have sometimes thought that perhaps the singular special modification of the labrum and mentum in the former genus, might not be taxonomically so radical as considered by Lacordaire, but it is at all events a very convenient criterion in classification and I know of none other as a substitute.

Rutela Latr.

This genus, having an elongate-oval form of body and generally very smooth, polished and more or less strikingly ornamented integuments, has its principal focal centre in the West Indies, though a number of species occur also in South America and Mexico. One of the Cuban species occurs also in southern Florida and is very well known in collections. The oral organs are of the usual type in the preceding genera, the mentum feebly concave anteriorly; the mandibles are bidentate externally; the prolongation of the metasternum between the middle coxæ, the suture being completely obsolete, is unusually broad, narrowing to the very obtuse overhanging apex. The tarsi are slender, the claws simple and only slightly unequal in size and the antennal club is moderate in both sexes. Our single, but not truly native, species is the following:

Body elongate-oval, convex, the elytra somewhat flattened medially, highly polished throughout and completely glabrous below as well as above, pale brownish-flavate in color, with complex black and feebly submetallic spots and vittæ; head moderate, minutely punctate laterally, the clypeus triangular, with straight sides and rather sharply bidentate, somewhat reflexed apex, its surface strongly and

densely punctate except basally, the suture only visible laterally; color flavate, broadly metallic black laterally but not on the clypeus; prothorax strongly, evenly convex, not twice as wide as long, with feebly rounded, somewhat post-medially subprominent sides and very broadly lobed base, the bead wholly wanting at base but almost entire at apex, thick and convex at the sides; apical angles rather sharp, the basal somewhat obtuse though only blunt at tip; surface impunctate, very even and sculptureless, metallic-black, flavate at base, except medially, also broadly at the sides, there inclosing an elongate black spot, also with three flavate apical spots, the medial prolonged and vittiform, the lateral triangular, also with two oblique linear discal pale spots converging toward the middle basally; scutellum but very slightly longer than wide, narrowly parabolic, smooth and pale, with black margins; elytra but little longer than wide, a fifth wider than the prothorax, strongly rounded behind, polished and without sculpture, the female with a short oblique ridge at each side angulating the edge, wanting in the male, flavate in color, the suture and three posterior vittæ black, the external more oblique and joining the others posteriorly, the vittæ generally anteriorly prolonged in finer lines but never to the base; humeral region with some irregular black markings; pygidium smooth (♂) or with a few scratches laterally (♀), piceous, pale at the sides in the latter but with only two apical pale spots in the former sex; under surface sharply variegated with flavate and black. Length (♂♀) 13.8–16.0 mm.; width 7.8–9.2 mm. Southern Florida.

formosa Burm.

To describe the maculation in any way completely, would require a large amount of verbiage; it is a rather common species in Cuba and Haiti and is apparently not uncommon also in Florida.

Polymœchus Lec.

The Parastasiids, of which *Polymœchus* may be considered an aberrant member and the only one known from the American continents, are altogether one of the most anomalous of the smaller divisions in this part of the Scarabæidæ, having affinities in several external directions, as for instance toward the Dynastinæ in the case of *Polymœchus*. In fact the Parastasiids do not hold together among themselves at all well, the habitus of *Parastasia*, *Peperonota* and *Polymœchus* being notably divergent, to such a degree that even Lacordaire himself, in a letter written to LeConte and quoted by the latter under his original description, declares unconditionally that *Polymœchus* can be nothing else than a Dynastid. *Cnemida*, included by Lacordaire in the group, is not alluded to by Dr. Ohaus in his interesting review of the

Parastasiids (Deut. Ent. Zeit., 1900, p. 225); this puzzling genus is a Cetoniid in almost every way, including a strong habital resemblance in that direction, excepting only that the tarsal claws are thoroughly Rutelid, it forming one of those exceptions rendering a rigorous definition of major groups so difficult in such large and long established families as the Scarabæidæ.

In *Polymœchus* the body is almost exactly as in *Ligyrus* in general features of form, coloration and sculpture, but the eyes and antennal club of the male are notably more developed, and the peculiar dentition of the anterior tibiæ and in part widely cleft tarsal claws, betray its very wide distinction. Its anatomical characters are given by G. H. Horn (Tr. Am. Ent. Soc., 1882, p. 121) and some misstatements of the latter, due to the persistent refusal of that author to employ adequate optical means of amplification, corrected by Ohaus (l. c., p. 258), so that no detailed account is necessary at the present time. The species are few in number and individually rare, or at least seldom taken by collectors; those in my collection may be known as follows:

Form cylindric-oval, strongly convex, shining, castaneous to black in color throughout, glabrous, the sterna with long, moderately dense yellowish hairs; head slightly (♂) to very much (♀) less than half as wide as the prothorax, linearly rugulose and punctulate, discretely punctate basally, the eyes (♂) convex, prominent and separated by fully twice their width, or (♀) smaller, less convex and separated by two and one-half times their width; clypeus slightly concave, twice as wide as long, the edges strongly reflexed, the apex sharply bidentate and strongly upturned, the dividing sinus continuing posteriorly on the disk as a slightly impressed line, bounded anteriorly by two acute ridges extending posteriorly from the teeth; sides becoming parallel basally; antennal club (♂) longer than the stem, or (♀) much shorter, though fully as long as the shorter stem in that sex; prothorax evenly and strongly convex, three-fourths wider than long, the sides subevenly rounded, becoming parallel, viewed dorsally, in about basal half; apical sinus very feeble, the angles extremely short and obtuse, the basal obtuse and rather narrowly rounded; base feebly lobed medially, without trace of beading, the apical bead coarse and entire, the lateral fine and reflexed; punctures rather strong, somewhat well separated, closer laterad, becoming minute and remote medio-basally; scutellum well developed, wider than long, almost perfectly smooth, the sparse punctulation extremely minute; elytra not wider than the prothorax, a fifth longer than wide, rapidly and very obtusely rounded at apex, the sides subparallel, feebly arcuate posteriorly; surface with regular and feebly impressed coarse striæ of very shallow, annular punctures, the second

interval rugulose and with similar confused punctures broadly throughout; pygidium finely, sparsely punctate, rugulose basally, smoother in the male; metasternum short and rather broad between the middle coxæ, flat, abruptly, steeply sloping anteriorly; prosternal process very short, triangular; anterior tibiæ with the two external teeth extremely and peculiarly approximate and near the base of the apical process; hind tibiæ shorter than the femora and about equal in length to the rather slender tarsi. Length (♂♀) 14.5–15.8 mm.; width 8.5–9.0 mm.; length of antennal club (♂) 2.25; (♀) 1.45 mm. New York to North Carolina (Southern Pines) and westward to Illinois..... **brevipes** Lec.

A—Similar to *brevipes* but rather smaller in size; head similar but with still larger and more prominent eyes, these separated in the male by only three-fourths more than their own width; prothorax similar but shorter, four-fifths wider than long; elytral striation still coarser and more impressed. Length (♂) 14.0 mm.; width 7.6 mm. Indiana..... **discernens** n. subsp.

Form cylindric-oval and very convex, still stouter than in *brevipes*, shining, black or piceous-black; head and clypeus (♂) similar, except that the latter is shorter, more than twice as wide as long; antennal club much longer than the stem, the sixth and seventh joints of which are similarly oblique but less transverse; eyes in the male very convex, separated by distinctly less than twice their width; prothorax differing decidedly in outline, widest at base, the sides thence moderately converging and feebly, evenly arcuate to the very obtuse apical angles, viewed dorsally, but with the usual medial arcuation when viewed obliquely, less transverse, about three-fifths wider than the medial length, which is greater, owing to the more prominent median lobe; lateral bead turning more into the base than in *brevipes;* apex still more nearly truncate; punctuation and sublateral pit similar; scutellum a little larger, fully two-fifths as wide as an elytron; elytra barely longer than wide, almost similar in form and sculpture; pygidium rather more punctured; under surface and legs nearly similar, except that the tarsi are a little shorter and thicker, the widely diverging arms of the ungual cleft shorter and apically more obtuse. Length (♂) 15.5 mm.; width 9.0 mm.; length of antennal club 2.4 mm. Pennsylvania..**conicicollis** n. sp.

I think there can be comparatively little doubt that *conicicollis* is truly a different species, as shown by its stouter outline and shorter elytra, conical and less transverse prothorax, slightly longer antennal club and still larger eyes; especially, also, by the somewhat larger scutellum.

Tribe GENIATINI.

The following Geniatids seem to be undescribed, or at least I have not been able to find descriptions fitting them at all closely:

***Bolax vittatus** n. sp.—Body unusually large, oblong, moderately convex, shining, glabrous, pale flavo-testaceous, the head and pronotum black, the latter with pale sides dilated at apex and behind the middle, the head gradually rufo-piceous anteriorly; elytra pale, the broader flat intervals black, the second stripe more or less finely disintegrated and the lateral of the four narrow and partially pallid; head large, four-sevenths as wide as the prothorax, the punctures coarse, slightly separated, gradually fine toward base, the clypeus large, semicircular, with still coarser and more confluent punctures, the margins all distinctly reflexed, the suture fine, transverse, distinct, still finer at the sides; eyes large, prominent; prothorax short, very transverse, two and one-half times as wide as the median length, the sides broadly rounded, more converging and less arcuate from well behind the middle to the very prominent and sharp apical angles, widest near basal third, the moderately obtuse basal angles rounded; base with a rather fine bead broadly interrupted at the middle; apical sinus very deep, transverse at the bottom; surface with a longitudinally crescentiform impression very near each side, the punctures fine and sparse, becoming still finer and sparser laterally; scutellum ogival, rather strongly, evenly and loosely punctate; elytra slightly inflated and with arcuate sides behind basal fourth, not quite a third longer than wide, behind the middle as wide as the prothorax but at base distinctly narrower, three times as long, rounded in apical third, the wide flat dark intervals confusedly and rather strongly punctate, separated by narrower, convex and minutely, very sparsely punctulate pale intervals; pygidium glabrous, transversely, densely rugose, becoming smooth and sparsely punctate medially; legs slender, the hind tibiæ not surate, the larger claw of all the tarsi arcuate, deeply incised at apex, the posterior longer and with relatively less deep incisure; all the tarsi with spiniform hairs beneath. Length (♀) 20.8 mm.; width 10.3 mm. Isthmus of Panama (Culebra),—Gaillard.

Differs from *magnus* Bates, in having the prothorax widest behind, and not before, the middle, in the finer thoracic punctures and rather differently punctured elytra; the larger punctures of the flat intervals are mingled with very minute sparse punctulation, like that pervading the narrower convex intervals.

***Leucothyreus cephalotes** n. sp.—Body small, convex, rather slender, parallel, polished, black and glabrous, with feeble metallic lustre above, black and rather shining, with fine decumbent separated hairs beneath, nearly wanting broadly toward the middle, and short slender testaceous legs; head five-sixths as wide as the prothorax, evenly convex, finely, sparsely punctate, the clypeus short, between two and three times as wide as long, circularly rounded, gradually moderately reflexed anteriorly, the punctures coarse and rugose apically, thence gradually smaller and sparse basally, the suture very fine and obsolete, barely traceable; eyes very moderate but convex and prominent; prothorax short, rather more than twice as wide as long, widest at the middle, the sides evenly and slightly arcuate, the basal angles more than right but very sharp,

not in the least blunt, the apical but little produced beyond the median part of the broadly arcuate apex, which becomes sinuate laterally; base without marginal bead, the apex with a bead only near the sides; surface evenly convex, with rather small but strong, sparse punctures, equally distributed throughout; scutellum broadly ogival and very obtuse, punctured except peripherally and at the middle; elytra a third longer than wide, rounded in posterior two-fifths, equal in width to the prothorax and less than three times as long, parallel at the sides; surface with strong and rather confused loose sculpture, the punctures in large part linearly arranged, especially toward the suture; pygidium with coarse transverse strigose sculpture, having short white pubescence laterally; tarsi albido-pilose beneath. Length (♂) 9.8 mm.; width 4.8 mm. Costa Rica.

The only species known to me from near the habitat of this species is *femoratus* Burm., and this, as figured in the Biologia, is very much stouter. The hind femora in the above type are not modified, although it seems to be a male.

***Leucothyreus bakeri** n. sp.—Body stout, oval, very convex, glabrous, very shining, black, with evident metallic lustre, varying from obscure to brighter subcupreous, the under surface rufo-piceous, with very small sparse decumbent hairs laterally and throughout on the posterior coxæ, the legs darker, with bright greenish-metallic lustre; head large, evenly and moderately convex, finely, sparsely punctate, more densely at the extreme base; clypeus more than twice as wide as long, subtrapezoidal, broadly arcuato-truncate at apex, with broadly rounded angles and with rather stronger punctures than on the head, sparse medially, dense laterally, the edges all finely and abruptly reflexed, the suture fine, transverse, distinct throughout; eyes well developed, convex and prominent; prothorax transverse, rather more than twice as wide as long, the sides broadly arcuate, converging apically, subparallel basally, the basal angles obtuse and rounded, the apical projecting well beyond the median transverse part of the apical sinus; surface evenly convex, with small but strong, sparse punctures equally distributed throughout; base not beaded but with a rather strong median lobe; scutellum nearly as in the preceding; elytra about a fourth longer than wide, slightly inflated behind, at base fully as wide as the prothorax, posteriorly much wider, fully three times as long as the prothorax, having even coarse impressed striæ, which are finely, confusedly and closely punctate; pygidium with coarse deep strigose sculpture, becoming upwardly oblique in direction laterally, coarsely punctate medio-basally and with minute white hairs apically toward the sides: anterior and middle tarsi densely albido-pilose beneath, the posterior compressed and with few longer hairs; larger claw of all the tarsi cleft; anterior tibiæ only bidentate externally, the posterior feebly surate. Length (♀) 12.3–13.0 mm.; width 7.2–8.0 mm. Brazil (Para),—C. F. Baker.

The pronotum along the base laterally is feebly impressed, somewhat as in *cephalotes* and others of this genus, but the oval form of

the body and simply bidentate anterior tibiæ might possibly imply generic difference, which would be revealed more decisively in the male.

Subfamily DYNASTINÆ.

This great subfamily, comprising a remarkable variety of form and habitus, includes among its host of species the largest of the known Scarabæidæ. There are many structural features common to the Dynastinæ and Rutelinæ, for example the corneous ligula is soldered rigidly to the mentum and the almost uniformly 10-jointed antennæ always have a 3-jointed club in both subfamilies. The Dynastinæ differ radically, however, in having the tarsal claws equal in size, excepting the anterior in the males of certain species; but there are some genera the assignment of which to the Rutelinæ, Dynastinæ or Cetoniinæ it is difficult if not impossible to decide under our present knowledge. The mandibles are nearly always exposed, though concealed in most of the Cheiroplatids, and are generally in part ciliate, and the anterior coxæ are transverse and deeply seated. It is unsafe to add further to these few diagnostic characters, in view of the diversities of structure and the numerous exceptions, further than to say that corneous thoracic and cephalic processes in the males are as characteristic of the Dynastinæ, as their absence is of the Rutelinæ. It should be added also, that the labrum is always visible in the Rutelinæ and almost invariably hidden under the clypeus in the Dynastinæ. Excepting in the isolated Cyclocephalini, the clypeus is but rarely truncate as is so frequently the case in the preceding subfamily, but is generally more or less acuminate and reflexed at tip and variously dentate to edentate. The scutellum varies greatly in the Rutelinæ, being sometimes small and occasionally enormously developed, but here there is a remarkable uniformity, it being generally very moderate in size. Finally it is to be noted that metallic lustre of the integuments is a very common character among the Rutelids but is very rare among the Dynastinæ.

As far as the North and South American fauna is concerned the tribes may be arranged as follows, the mandibles being corneous throughout:

Labial palpi inserted at the sides of the ligular part of the mentum....2
Labial palpi inserted on the inner face of the ligular plate.....7

2—Pronotum similar in the sexes, except in the Cheiroplatids, never having elongate corniform processes in the male.....3
Pronotum dissimilar in the sexes, having more or less developed corniform processes in the male as a rule, either on the prothorax alone or on both the head and pronotum.....5
3—Post-coxal process of the prosternum obsolete as in Agaocephalini; slender filiform hind tarsi and slender mandibles nearly as in Cyclocephalini, the elytra similarly variegated in color but with thicker integument; clypeus as in Pentodontini; pronotum with an asexual indentation; middle and hind tibiæ densely and asperately sculptured; antennal club long, especially in the male..*ORYCTOMORPHINI
Post-coxal process distinct as usual, though sometimes nearly concealed in a thick brush of hair; tibiæ never sculptured as in the preceding tribe.....4
4—Pronotum never impressed or foveate; tarsi slender and Melolonthid in form, the anterior usually strongly modified in the male; mandibles usually slender, broader in the Dyscinetids; integuments not very dense as a rule, sometimes very thin and frequently variegated in color; stridulating structures always wanting...CYCLOCEPHALINI
Pronotum with or without an anterior impression, which is always asexual except in the Cheiroplatids; tarsi shorter and more tapering, with triangular and externally produced basal joint as in Oryctini; anterior tarsi unmodified in the male, except in *Ligyrodes*, *Heteronychus* and *Corynoscelis;* integuments thick, never variegated in color; body generally stout in form, with or without stridulating apparatus.....PENTODONTINI
5—Tarsi shorter, more tapering, with triangular basal joint as in Pentodontini.....ORYCTINI
Tarsi long, filiform though thick, the basal joint not or scarcely triangular.....6
6—Post-coxal process of the prosternum large and evident; body very large in size, smooth, never metallic.....DYNASTINI
Post-coxal process obsolete; body smaller, the corniform processes less developed; coloration frequently metallic—a very exceptional character in the subfamily.....*AGAOCEPHALINI
7—Body generally more or less oblong and flattened above, usually deep black in color and with thick, dense and strongly sculptured integuments; crests and tubercles of the head and pronotum similar in the sexes as a rule; tarsi nearly as in Oryctini.....PHILEURINI

The tribes Oryctomorphini and Agaocephalini are almost purely South American and need not be dwelt upon more fully at this time; the former, as represented by *Oryctomorpha*, is in fact confined to Chile; it is so composite and isolated in structure, that to place it near the Pentodontini in the table would destroy the desirable continuity brought about by placing *Ligyrodes* next after *Dyscinetus* and the Oryctini immediately after *Bothynus* and *Anastrategus* of the Pentodontini; so I have eliminated it from the general series

and placed it at the head, its many analogies with the Cyclocephalini demanding that it be not far removed therefrom in any event. The Agaocephalini are represented north of Panama only by two species so far as known—*Lycomedes mniszechi* and *beltianus*. These two tribes are introduced above merely for comparison and in order that the entire Dynastid fauna of the western hemisphere may be more fully represented in the table.

Tribe CYCLOCEPHALINI.

The American continents are the true home of this tribe and here they exist in great number and variety, both generically and specifically. Only two genera, as understood by Lacordaire, belong to the old world fauna—*Brachyscelis* and *Peltonotus*, but the latter, as well as the genus *Pachylus*, has recently been transferred to the Rutelinæ by Mr. Arrow. There are no sexual differences pertaining to the head or pronotum, but the anterior tarsi are decidedly modified in the males of all but one or two genera, being stouter than in the female, with the last joint swollen as a rule and having the claws extremely unequal, the larger very stout, usually dentate within and abruptly bent at base and unequally cleft at tip, the upper ramus small and slender, sometimes wanting as in *Cyclocephala signata;* occasionally the larger claw is of a radically different structure, being divaricately forked, as in *Dichromina* and *Palechus*. The tarsi are slender and filiform, generally long and more Melolonthid in structure than Dynastid. Lacordaire assumes considerable importance for the frequent immargination of the pronotal base, but there is so much diversity in the conformation of the basal margin, that it is really not so significant as it would appear; in many forms the edge is wholly without beading or the so-called margin, as in many Rutelids, as well as in most of the Pentodontini, but in almost as many more it takes the form either of a fine entire doubling of the edge, as in *Cyclocephala* proper, or a thick and more or less entire marginal bead, best developed in *Augoderia*, *Harposcelis*, *Anoplocephalus* and in one group of *Stigmalia*, but frequently seen toward the sides of the base in species of other genera, either as a rule or exceptionally. The large number of species in the heterogeneous *Cyclocephala* of Burmeister and Lacordaire, lend themselves very well to generic subdivision so far as now seems

apparent, though not exactly upon the lines serving as bases for group division assumed by those authors. The genera, as based upon material in my collection, all have 10-jointed antennæ and may be separated as follows:

Mandibles slender.....2
Mandibles broad, rounded externally, concealed almost entirely under the clypeus; body elongate, subcylindric or oval, generally black, the clypeus short, trapezoidal, sinuate or sinuato-truncate at apex; pygidium of the same general form as in *Cyclocephala*.....18
2—Pygidium moderate in size; anterior tibiæ tridentate.....3
Pygidium very large and convex; anterior tibiæ bidentate, the teeth long and slender; middle coxæ subcontiguous.....17
3—Intermesocoxal surface rather broad, polished and evidently convex though not prominent; pronotum with a thick and strong entire basal bead; elytra coarsely and deeply, confusedly punctate, without striation of any kind; color pale, with black spots and transversely sinuous elytral maculation; pygidium dull, finely and extremely densely granulato-rugulose; clypeus rather short, broadly, evenly parabolic, strongly and closely sculptured, the suture distinct and entire; mentum hairy, the ligula small, subquadrate [Type *A. nitidula* Burm.] Brazil.....***Augoderia** Burm.
Intermesocoxal surface flat, generally narrow; pronotum not or only partially or very minutely beaded at base, the bead strong and entire in one group of *Stigmalia;* pygidium never densely dull; elytra always with partially striate sculpture.....4
4—Head larger, never less than half as wide as the prothorax.....5
Head small, nearly always less than half as wide as the prothorax....7
5—Posterior tarsi with the basal joint slightly produced externally at apex; body oblong, testaceous in color, not maculate, finely sculptured; clypeus large, transversely quadrate, with rounded angles and transverse, feebly reflexed margin; legs slender. [Type *A. singularis* Bates] Central America.....***Aspidolea** Bates
Posterior tarsi with the basal joint slender, sometimes a little shorter than the second and stouter, especially in the female, but never very markedly produced externally; body large to moderate in size..6
6—Head very large, two-thirds as wide as the prothorax; clypeus large, flat, subquadrate, with broadly rounded angles and arcuate, feebly reflexed apex; body stout, subcylindric, the type deep black and shining throughout, strongly sculptured, the elytra with coarsely punctured sulci. [Type *Cyclocephala carbonaria* Arrow] Isthmus of Panama.....***Mononidia** n. gen.
Head moderately large, one-half to three-fifths as wide as the prothorax, the clypeus large, flat, nearly as in the preceding but with the apex feebly or moderately sinuate medially and the edge scarcely at all reflexed; pronotum unmargined or strongly margined at base; elytra generally with fine, moderately punctate striæ or in great part with confused sparse punctulation; body elongate-oval, similarly very convex, pallid in coloration, with or without black spots;

middle coxæ narrowly separated, the intervening surface concealed by tawny hairs. [Type *Cyclocephala mafaffa* Burm.] Mexico and Central America.....*Stigmalia n. gen.

7—Ligula deeply impressed, the apex more or less acutely bilobate; mentum not impressed at base.....8

Ligula not deeply impressed, nor with the apex strongly bilobed; mentum not impressed at base.....10

Ligula very small, truncate, slightly convex; mentum convex, bristling with coarse hairs, having basally a large and very deep angulate concavity; mandibles and labrum very small, concealed; body oblong, convex, the type deep black, shining and with strongly sulcate elytra, somewhat as in *Mononidia;* clypeus trapezoidal, concave and much reflexed apically, the apex deeply and rather narrowly sinuate and prominently bilobed, the suture obsolete; front tumid centrally; pronotum with a thick entire basal bead; middle coxæ barely at all separated; legs slender, the filiform tarsi very much longer than the tibiæ, the claws unusually large and long. [Type *A. cribrifrons* Schf.] Sonoran regions.....**Anoplocephalus** Schf.

8—Middle coxæ contiguous or virtually so, the very narrow intermediate surface concealed by dense bristling hair; body of rather large size, varied in coloration from entirely pale to wholly black, generally with feeble elytral sculpture; pronotum unmargined at base, though often with an evident bead near the sides; clypeus more or less acutely ogival in form; abdomen normal. [Type *Cyclocephala scarabæoides* Burm.] Neotropics and northward to Arizona.

Ancognatha Erichs.

Middle coxæ rather widely separated, the intermediate surface flat and glabrous; posterior pronotal edge finely double.....9

9—Body oblong-oval, convex, pallid, with few small dark elytral spots; head about half as wide as the prothorax, the clypeus nearly as long as wide, narrowly parabolic, gradually and rather strongly reflexed apically, the periphery very finely and equally beaded throughout; mentum more convex than in the preceding; ligula deeply impressed at apex, the lobes limiting the deep sinus acute as in *Ancognatha.* [Type *Cyclocephala maculata* Burm.] Cayenne and the Amazon regions.....*Mimeoma n. gen.

Body more elongate-oval, the habitus more as in *Cyclocephala signata,* the elytra pallid, with a few black dashes; clypeus flat, feebly trapezoidal, with rounded sides and broadly rounded angles, the apex but feebly reflexed and deeply sinuate medially; mentum quadrate, rather convex, the abruptly moderately narrow ligula not deeply concave, broadly sinuate at apex between the bluntly dentiform prominences, the legs notably slender as in the preceding genus. [Type *Cyclocephala discicollis* Arrow] Isthmus of Panama.

*Diapatalia n. gen.

10—Abdomen generally normal and with the segments subequal in length in both sexes, sometimes with the fifth segment (♂) a little longer than the others; body moderate to rather small in size.....11

Abdomen (♂) with the first four segments very short, together not as long as the last two combined, or (♀) normal and with subequal

segments, the mentum densely hairy in the former, nude in the latter, sex; legs stout, the middle coxæ rather well separated....16

11—Ligula small, sharply pointed, the palpi projecting from the sides of the point; mentum small, oval, feebly convex, sparsely punctured and clothed with very long erect pubescence; body oblong, stout, moderate in size, convex; clypeus short, with the sides near the sharply reflexed arcuate apex usually sinuate for a short distance; mandibles slender, slightly everted at tip; middle coxæ widely separated; sterna conspicuously pubescent; legs moderate, the tarsi slender and rather long. [Type *S. nubecula* n. sp.]. Sonoran regions.....**Spilosota** n. gen.

Ligula abruptly much narrower than the mentum, flat or nearly so, truncate to sinuate at tip.....12

Ligula broad, transverse, almost as wide as the mentum.....15

12—Hind tarsi much shorter in the female than in the male as a rule, but always slender and much longer than the tibiæ.....13

Hind tarsi very short, generally much shorter than the tibiæ in both sexes; body more elongate.....14

13—Body oblong, generally somewhat depressed, pallid, the pronotum usually with two large dark spots, the elytra with oblique lines, sometimes resolved into a few spots, frequently sparsely pubescent; clypeus large, flat, feebly subtrapezoidal, with rounded sides, broadly arcuate, finely and feebly reflexed apex and broadly rounded angles; middle coxæ always well separated; posterior edge of the pronotum invariably finely double. [Type *Melolontha signata* Fabr.] Neotropical regions.....***Cyclocephala** Latr.

Body oblong-oval, more convex, of very uniform pale brownish-yellow or flavate coloration, usually immaculate in the subarctic regions but frequently with more or less feeble and transversely sinuous elytral ornamentation in the tropics, the elytra sometimes sparsely pubescent; clypeus shorter, more reflexed at apex, subtrapezoidal to semicircular, more coarsely sculptured than in the preceding but similarly never sinuate; middle coxæ only narrowly separated; posterior edge of the pronotum never finely double as in the preceding, always immarginate medially, sometimes with feeble beading laterally. [Type *Melolontha immaculata* Oliv.] North and South America.....**Ochrosidia** n. gen.

14—Form elongate-oval, convex and shining, pallid and immaculate, the head and prothorax generally darker than the elytra; clypeus smaller, more trapezoidal, still more reflexed at tip and differing from any of the preceding genera in being more or less evidently angulate at each side of the apex, which is more truncate; middle coxæ narrowly separated; base of the pronotum generally beaded toward the sides; larger claw of the anterior male tarsi broadly forked or divaricate at tip. [Type *Cyclocephala dimidiata* Burm.] Sonoran regions of North America.....**Dichromina** n. gen.

Form and general habitus nearly as in the preceding genus throughout but with the hind tarsi not quite so short, the posterior being notably longer than the tibiæ in the male, though distinctly shorter than the tibiæ in the female, differing principally in the normal, unequally

split larger claw and in the form of the clypeus, which is nearly flat, feebly sculptured, larger in size, feebly trapezoidal, with arcuate apex and broadly rounded angles, the apex moderately reflexed and without trace of lateral angulation. [Type *H. divisa* n. sp.] Neotropics.....***Homochromina** n. gen.

15—Form elongate-oval, strongly convex, very shining, the type deep black throughout, the elytra with transverse rufous ornamentation; clypeus large, flat, semicircular, the apex moderately reflexed, feebly sculptured, the suture very fine, sinuous; base of the pronotum with a strong entire double edge; middle coxæ distinctly separated. [Type *Cyclocephala fasciolata* Bates] Mexico..***Halotosia** n. gen.

16—Body elongate-oval, convex, very highly polished and almost completely sculptureless; elytra of peculiar form, more narrowed posteriorly and but little longer than the head and prothorax, the latter unusually elongate and but little wider than long, the basal edge finely double; clypeus large, feebly trapezoidal, with arcuate sides, rounded angles and arcuato-truncate, feebly reflexed apex, only very slightly sculptured; middle coxæ slightly separated; tarsi long and slender. [Type *Melolontha castanea* Fabr.] Tropical South America —Guyana.....***Aclinidia** n. gen.

17—Outline oblong-suboval, strongly convex, highly polished, almost completely sculptureless and monochromatic as in the preceding genus; clypeus very large and broad, nearly flat, feebly sculptured, parallel at the sides, the truncate apex broadly sinuate medially, the angles rounded, the periphery strongly beaded, thickly at apex, which is unreflexed; pronotum of peculiar form, the feebly converging sides sinuate basally, the angles distinct; base margined laterally; ligula small, subquadrate; middle coxæ contiguous; anterior tarsi (♂) with short basal joints and very large claw-joint as in the preceding genus. [Type *Apagonia emarginata* Mann.] Brazil.
***Erioscelis** Burm.

18—Anterior tarsi modified sexually, the claws unequal in the male as in all the preceding genera; tip of the prosternal process bulbose or enlarged.....19

Anterior tarsi similar in the male and female, slender.....20

19—Pygidium free, glabrous; body subcylindric, the elytra briefly inflated at the middle in the female, variably sculptured but always in part linearly; clypeus short, strongly trapezoidal, sinuato-truncate at apex; mentum large, smooth, not very convex, the ligula much constricted; base of the pronotum never margined; legs slender, the middle coxæ contiguous. [Type *Melolontha geminata* Fabr.] Neosubarctic regions to Brazil. (*Chalepus* MacL.)
Dyscinetus Harold

Pygidium shorter, united rigidly to the propygidium, having long conspicuous pubescence; body more oval, more acute at apex, the elytra more nearly covering the pygidium, especially in the female, where its sides are similarly obtusely prominent at the middle; other characters nearly as in *Dyscinetus*, except that the ligula is broad and not

abruptly narrower than the mentum, the latter setose. [Type *Scarabæus barbatus* Fabr.] Neotropics.....***Parachalepus** n. gen.

20—Body nearly as in *Dyscinetus*, but with the elytra more deeply sulcate and the hind tibiæ stouter; post-coxal process of the prosternum long, gradually acuminate, differing radically from the form assumed in either of the preceding genera; mentum generally more tumid centrally. [Type *Geotrupes laborator* Fabr.] Neotropics, more especially in South America.....***Stenocrates** Burm.

In this scheme I have been obliged to omit three of Burmeister's genera: *Pachylus*, which having 9-jointed antennæ and the outer claw of all the tarsi dentate beneath, should form a separate tribe—of the Rutelinæ according to Arrow,—*Democrates*, distinguished from all the others by the long acuminate mentum and *Harposcelis*. In addition to these the number of genera will be increased considerably by types which are still unknown to me. Mr. Gilbert J. Arrow (Ann. Mag. Nat. Hist.) describes, for instance, a number of Central American Cyclocephalid species, some of which, besides those noted above, such as *acuta*, *prolongata* and *brevissima*, apparently betoken special generic types and such forms as *fuliginea*, *curta*, *proba* and *nigerrima*, as figured in the Biologia, would certainly seem to indicate still other genera or subgenera.

Mononidia n. gen.

The general habitus of the type of this genus is quite unlike that of any other species known to me, either in nature or by description; this is due largely to the intensely black shining surface, large head, cylindric form and sulcate elytra. The mandibles are slender, parallel, obtusely rounded at tip, with the lower part of the surface at apex swollen; they are exposed, when open, at the sides of the very large clypeus; the maxillary galea is bifid at apex as usual and the palpi are very moderate in development. The mentum is oval, slightly elongate, evenly convex, coarsely and sparsely punctate, having stiff sparse hairs arising from the punctures, and the apex or ligular part is abruptly constricted, its apex transverse and with a very minute median notch. The antennæ and eyes are of moderate size and proportion. The type may be described as follows:

Body of rather large size, cylindric, parallel, strongly convex, shining and deep black throughout, the palpi and antennæ piceous; sterna glabrous; head large, with sparse and moderate punctures throughout, the clypeus arcuate, broadly but moderately reflexed and sculpture-

less apically, the suture extremely fine and feeble; prothorax rather more than twice as wide as the medial length, the sides broadly rounded, gradually very moderately converging before the middle, the apex broadly, deeply sinuate, the prominent angles well defined, the basal obtuse and rounded; marginal bead thick and strong, flatter but entire at apex, minutely angulate at the middle, wholly obsolete throughout the basal margin; punctures rather large, sparsely and subevenly disposed throughout; scutellum ogival, minutely and remotely punctulate; elytra but little longer than wide, barely wider than the prothorax, slightly inflated except basally, rapidly and very obtusely rounded at apex, the surface with very coarse and somewhat irregular, broadly and rather deeply impressed sulci, each with a well spaced series of rather small shallow punctures along the bottom; pygidium transverse, moderately convex, with rather coarse shallow circular and close-set punctures basally, each bearing a short, centrally placed hair, the punctures gradually finer and sparse apically but with similar short stiff hairs; middle coxæ narrowly separated; legs slender, the tarsi (♀) slender and filiform; abdominal segments subequal, each with a transverse series of rather large shallow annular punctures, bearing very small hairs, the punctures obsolete medially. Length (♀) 21.5 mm.; width 12.0 mm. Isthmus of Panama (Culebra Cut),—Gaillard. [*Cyclocephala carbonaria* Arrow]..... ***carbonaria** Arrow

The lateral edges of the elytra are only very feebly thickened and a little more arcuate at the middle in the female.

Stigmalia n. gen.

This is a large genus, wholly neotropical and above the average in point of corporeal size, including in fact the largest species of the tribe. It comprises several types of coloration and pronotal structure but otherwise is homogeneous, and it appears to be a genus in a true sense of the word. The ornamentation types are represented by *mafaffa*, *lucida*, *gregaria* and *atricapilla*, as defined below, but a surprising and unexpected structural character sharply divides the *mafaffa* section into two groups, having ornamentation so absolutely similar that on first glance they would be unhesitatingly placed together as a single species; in one of these groups, *mafaffa* proper, the base of the pronotum is completely immarginate, as is the general rule in *Stigmalia*, while in the other, represented wholly by apparently undescribed species, there is an entire basal bead, as thick and conspicuous as in the genus *Augoderia*, showing more clearly than in any other instance known to me, the lack of taxonomic value possessed by the modification of the posterior

edge of the pronotum, at least in some parts of this tribe. Again, the basal joint of the hind tarsi, which are at least moderately long in both sexes, is shorter in the female than in the male, sometimes, as in *lucida*, but slightly and scarcely differing in form from the succeeding joints, but occasionally notably shorter and more triangular, with the outer angle somewhat produced and acute, a character to be considered in noting the diagnosis of *Aspidolea*, as given by Bates and quoted in the above table. The mandibles and mentum are very much as in *Mononidia*, but the mentum is flatter and less punctate to impunctate and the mandibles, though tumid beneath, are apt to be more or less prominent externally at the obtuse apex, though not everted as they generally are in *Cyclocephala* and *Aclinidia*. The antennal club is notably small in both sexes as a rule and never so long as the preceding seven joints combined, except in *atricapilla*, an aberrant type in the genus and having stouter mandibles, where it becomes much longer. The species in my collection may be known as follows:

Elytral suture dark in color, generally dilated at the middle and behind the scutellum; pronotum impunctate and bivittate with black....2
Elytral suture pale in color or so in great part.....7
2—Base of the pronotum with a thick entire bead as in *Augoderia*.....3
Base without trace of marginal beading.....6
3—Median black dilatation greatly expanded, forming a large spot almost confluent with the large basal black area and extending to outer third of the elytra; sculpture of the latter strong. Body stout, oblong, convex, shining, glabrous above and on the pygidium, the sterna with some short fulvous pubescence laterally; head rather more than half as wide as the prothorax, blackish, smooth and dull throughout, impunctate, except sparsely and finely toward the sides and about the apical parts of the large clypeus, which is as long as the entire head behind it, three-fourths wider than long, the sides parallel and straight in basal half, then gradually rounded, becoming subrectilinearly oblique to the broadly rounded angles, the feebly sinuate part of the apex not quite half as wide as the base, the margins finely beaded throughout, very feebly and gradually reflexed at apex, the surface nearly flat, the suture extremely fine and feeble; prothorax four-fifths wider than long, the sides broadly, evenly rounded, more converging apically than basally, the apical angles acute and sharp, the basal rounded; black vittæ broad, bisinuate externally, expanded greatly at apex and base, coalescent apically and attaining the hind angles at base, the sublateral black spot distinct; bead black and entire throughout; scutellum rufous, infuscate at the margins, almost sculptureless; elytra a fourth longer than wide, a little wider than the prothorax, the series coarsely im-

pressed and the scattered punctures rather coarse, becoming notably fine, sparse and feeble toward the sides, where (♀) the edge is only very feebly swollen at the middle, the short flattened margin being there very narrow and inconspicuous; pygidium smooth, almost punctureless, finely and feebly punctate laterally, the apical margin with the usual fulvous fringe; ventral segments each with a close-set series of setiferous punctures laterally near apical third; under surface piceous, the legs black. Length (♀) 20.0 mm.; width 11.7 mm. Mexico (Cuernavaca, Morelos),—Wickham.

*cuernavacana n. sp.

Median black dilatation of the sutural vitta small, sometimes wanting; elytral sculpture feebler as a rule.....4

4—Elytra short, but just visibly longer than wide, the median dilatation of the sutural vitta distinct, separated by a very short distance from the large post-scutellar spot, glabrous. Head (♂) slightly more than half as wide as the prothorax, not so large as in the preceding, piceous, black basally, sculptured as in the preceding, the clypeus nearly similar, the sides more evenly arcuate and slightly converging from base to the obliterated angles, the medial sinus very feeble, not half as wide as the base; prothorax almost exactly similar throughout in form and coloration but not so short; elytra barely at all wider than the prothorax, parallel, with feebly arcuate sides, rapidly and very obtusely rounded at apex, the large post-scutellar black region extending almost to the intra-humeral black spot, the usual small discal spot behind the middle distinct; series wholly unimpressed and composed of very small and widely separated punctures, the punctures of the broad second interval still more minute, fine, but less sparse toward the sides; pygidium castaneous, glabrous, finely punctate, with many scattered coarser punctures toward the sides; under surface blackish, the legs slender as usual and black; abdomen nearly as in the preceding. Length (♂) 19.5 mm.; width 10.8 mm. Mexico (Guerrero).....*fallaciosa n. sp.

Elytra elongate, at least a fourth or fifth longer than wide, the medial dilatation of the sutural vitta at a long distance from the scutellar spot; elytra similarly glabrous.....5

5—Body smaller, elongate-oval, convex, shining; head and prothorax throughout almost as in *fallaciosa*, the latter with the black, externally biemarginate vittæ as in the following species and *mafaffa*, the basal bead strong and entire; elytra nearly as in the preceding in coloration and sculpture, except that the impressed line near inner third is coarser and deeper and the black sutural vitta is not at all expanded at the middle (♀), or with a feeble tendency thereto (♂); surface smooth and shining, though sometimes rugose, probably adventitiously; pygidium (♀) smooth, almost punctureless and glabrous, or (♂) with distinct sparse punctures, each bearing a short stiff hair; under surface and legs piceo-rufous; metasternum at the sides sparsely and very moderately punctate and with short stiff sparse fulvous hairs. Length (♂ ♀) 19.0 mm.; width 9.5–10.6 mm. Mexico (Guerrero).....*deficiens n. sp.

Body much larger, nearly as large as in *mafaffa* and almost exactly similar

to the latter in ornamentation and sculpture throughout though more narrowly oval, with a smaller head and with the elytral punctures more confused as in the preceding species; head as in the preceding species, finely, sparsely and very inconspicuously punctured, the feeble clypeal sinus however broader, rather more than half as wide as the clypeal base, the suture similarly straight and so feeble as to be barely traceable; prothorax similar throughout; scutellum red with black margins; elytra a fourth longer than wide, barely wider than the prothorax, circularly rounded in posterior two-fifths, the lateral swelling of the female rather large but feeble, the short black explanate projection of the edge rather wider than in *deficiens* but not conspicuous; punctures everywhere small, sparse, impressed and confused; black sutural vitta forming a small quadrate expansion on each at the middle and a larger rounded post-scutellar expansion; subhumeral spot quadrate, separated by its own width from the scutellar, the post-medial black spot moderate; pygidium nearly similar in the sexes, very moderately convex, with fine punctures, remote (♀), or rather more numerous and distinct (♂), the latter with the surface more impressed near the lower margins; abdomen nearly as in all the preceding species; hind tarsi (♂) much longer, or (♀) evidently shorter, than the tibiæ, the basal joint in the latter shorter and stouter than the second joint. Length (♂ ♀) 21.0–23.7 mm.; width 11.1–12.2 mm. Mexico (Guerrero),—Baron.

***deceptor** n. sp.

6—Body oblong-oval, large in size, stout, convex, strongly shining; head black and less shining throughout, large, three-fifths as wide as the prothorax, the eyes better developed than in the preceding section and the clypeal sculpture much coarser and denser, the punctures confluent, slightly separated basally, the front sparsely punctate; suture transverse, feeble; clypeus large, longer than the rest of the head, not quite twice as wide as long, flat, the sides broadly arcuate, becoming parallel basally, the angles obliterated, the sinus feeble, more than half as wide as the base; prothorax three-fourths wider than long, convex, the sides evenly arcuate, but slightly more converging anteriorly, the apical angles acute and sharp, the basal broadly rounded; lateral bead strong, rounding the angle and then disappearing, traceable for a short distance by a feebly eroded line of punctuation, flat and entire at apex, the coriaceous anterior part with the usual medial angulation; color testaceous, with two approximate black vittæ, which are prominent externally at the middle, laterally prolonged at base not quite to the angles, the sublateral medial spot of the preceding section wanting; punctures minute and sparse, becoming more distinct, though sparse, at the sides; scutellum ogival, well developed, pale, margined with black; elytra (♀) a fifth longer than wide, with a distinct lateral swelling behind the middle and there a third wider than the prothorax, the marginal projection below the swelling not caused by a deplanation, as in the preceding section, but by a thickening of the edge; color and ornamentation exactly as in *deceptor*, the punctures more distinct and in great part disposed in unimpressed series, more confused suturad

and toward the sides; pygidium broad, wider than an elytron, minutely, sparsely punctate, polished and glabrous; abdomen and sterna as in the preceding section; hind tarsi (♀) barely shorter than the tibiæ, the basal joint but little shorter or stouter than the second but more triangular in section. Length (♀) 26.5 mm.; width 14.2 mm. Mexico (Jalapa). [*Cyclocephala mafaffa* Burm.]. . ***mafaffa** Burm.

A—Nearly similar but not so large and more abbreviated, the color, lustre and ornamentation identical; clypeus much less densely sculptured, the distinct punctures close-set anteriorly but not confluent, sparse in about basal half to the suture, which is effaced though traceable; prothorax similar but a little more transverse, scarcely punctate except sparsely though distinctly near the sides and just before the scutellum; elytra as in *mafaffa* but shorter, similarly circularly rounded in apical two-fifths, differing otherwise only in having the punctures stronger, these becoming fine but more notably close-set postero-externally; pygidium much smaller in size, scarcely as wide as an elytron; hind tarsi a little shorter and more slender. Length (♀) 23.0 mm.; width 12.4 mm. Panama?. . . . . ***histrionica** n. subsp.

7—Elytra together with eight or ten black spots, forming a subcircular ring; clypeal sinus very feeble; tarsi rather long in both sexes; pygidium pubescent 8

Elytra each with a large oblique basal, and another large subapical, black area, the two frequently confluent laterally; body not so large in size; clypeal sinus obsolete; tarsi long and slender 11

Elytra wholly devoid of maculation; body very moderate in size and of more slender form, the antennal club longer; clypeal sinus barely traceable; tarsi much shorter 12

8—Spot near the scutellum large, sometimes nearly half as long as the elytra and at base more than one-half as wide, in the form of an acute and sharply pointed right-angled triangle. Body elongate-oval, strongly convex, shining, pale brownish-flavate throughout above and beneath, the legs also pale, the dorsal spots black; head more than half as wide as the prothorax, black, the clypeus dark red, opaculate and very coarsely but shallowly punctato-rugose, twice as wide as long (♀), a little less (♂), much shorter than the rest of the head, feebly trapezoidal, with slightly arcuate sides and obliterated or very broadly rounded angles, the sinus gradual and extremely feeble; edges slightly but sharply reflexed; suture straight, evident; front strongly but sparsely punctate; prothorax very nearly twice as wide as long, evenly rounded at the sides, more convergent anteriorly to the prominent and acute angles, the basal angles rounded; lateral bead very fine, the apical moderately wide, entire, the basal completely wanting; surface evenly convex, with two approximate and rather large, irregularly black spots, arranged transversely at the central part of the disk, the sublateral dot minute and subobsolete; punctures everywhere sparse, rather small but distinct medially, becoming somewhat coarse laterally (♂), where they bear each a short erect hair, or still smaller and more glabrous (♀); elytra nearly a fourth longer than wide, barely at all wider than the prothorax,

circularly rounded behind, the eight spots well defined, the scutellar as large as all the others combined; punctures fine, sparse, becoming confused, closer, more distinct and coarsely but briefly pubiferous laterally, the flanks (♀) feebly and irregularly swollen behind the middle, the edge beneath the swelling with a short but abrupt and rather strong deplanation; pygidium (♂) rather small, very convex, punctulate and with abundant long stiff erect pale hairs, or (♀) much more transverse, less convex, with fewer and shorter hairs and more alutaceous toward the base and sides; abdomen sparsely, rather strongly punctured throughout; sterna moderately punctured and pubescent; hind tarsi (♂) very much, or (♀) only evidently, longer than the tibiæ; antennal club small in both sexes. Length (♂ ♀) 20.0–22.0 mm.; width 8.8–11.4 mm. Mexico (Guerrero). Four examples..... ***triangulifer** n. sp.

Spot near the scutellum always much larger than any of the others but more rounded, or, if subtriangular, with all the angles much rounded..... 9

Spot near the scutellum as small as the others and frequently obsolete, all the spots notably small.....10

9—Form oblong-oval, stouter than the preceding and scarcely so convex, very shining; head barely more than half as wide as the prothorax, black, with piceo-rufous clypeus, formed nearly as in the preceding but less coarsely and more feebly rugulose, the front similarly sparsely but more unevenly punctate and more evidently bi-impressed; prothorax short, twice as wide as long, throughout nearly as in the preceding but with the sublateral dark discal dot larger and more evident; elytra less elongate, broadly circularly rounded behind, the sculpture nearly similar but with the punctures postero-laterally more irregular, stronger and not quite so evidently pubiferous; edge beneath the post-medial swelling similarly deplanate but with the shelf notably longer and still wider; pygidium (♀) with similar sparse punctures, bearing stiff sparse erect hairs, but with the general surface basally and laterally much less finely rugulose and less alutaceous; abdomen similar; middle coxæ more widely separated, the flat intermediate surface not concealed by pubescence as it is in the *mafaffa* section; hind tarsi about as long as the tibiæ in the female, the basal joint stouter, subtriangular. Length (♀) 20.0 mm.; width 11.0 mm. Mexico (Jalapa). [*Cyclocephala lucida* Burm.] ***lucida** Burm.

A—Similar to *lucida*, except that the sparse pronotal punctures are everywhere stronger and more distinct and the two middle spots enlarged and elongated, so that they nearly attain apex and base, narrowly separated along the median line and each with broadly rounded external outline; elytra nearly similar, the female with a shorter shelf under the lateral swelling and the pygidium not uniformly pale in color but with a large black spot at each side of the middle. Length (♀) 19.0 mm.; width 10.0 mm. Mexico (Jalapa)..... ***discoidalis** Chev.

Form oblong-oval, convex, shining; head nearly as in *lucida*, the clypeus (♂) dark rufous, two-thirds wider than long, shallowly and sparsely

but rather coarsely punctato-rugulose, the angles rounding very broadly almost to the base, the sinus subobsolete; suture fine but distinct, nearly rectilinear; prothorax wholly devoid of maculation, excepting the sublateral dark dot, not quite twice as wide as long, formed nearly as in *lucida* but with much more broadly rounded basal angles and shallower apical sinus, the bottom of the sinus arcuate and not transverse as it is in *lucida*, the acute apical angles very much shorter than in that species; sparse punctures much larger and deeply impressed throughout, each bearing a rather long stiff erect hair; scutellum more acutely ogival, with rather large scattered punctures basally; elytra similar in form and not obviously wider than the prothorax but a little shorter, only a fifth or sixth longer than wide, the punctures rather less fine and not quite so sparse, with the short erect hair arising from each much more evident; maculation differing in having the subscutellar spot obliquely divided, forming two spots; pygidium (♂) much less convex, more transverse, more shining and with much less abundant, as well as shorter and stiffer, hairs than in the male of *triangulifer*, but probably more closely resembling the male of *lucida* in those features; abdomen loosely punctured throughout as usual in this section. Length (♂) 20.0 mm.; width 10.3 mm. Chiriqui.

***costaricana** n. sp.

10—Body narrow and elongate-oval, convex, shining, pale brownish-flavate in color above and beneath, the legs pale as usual in this section; two pronotal spots moderate to small, sometimes altogether obsolete; head deep black, sparsely and irregularly punctate, the clypeus red, more coarsely but very shallowly, rather loosely punctato-rugulose, similar in the sexes, less than twice as wide as long, the sides rather rapidly converging and broadly arcuate from the base, the angles broadly rounded and the sinus very feeble, all the edges sharply but finely reflexed and blackish; prothorax two-thirds (♂) to four-fifths (♀) wider than long, the sides strongly, evenly rounded, more converging apically, the angles prominent and very sharp throughout, nearly as in *triangulifer* but less transverse, with the middle of the apical sinus much more prominent and rounded, and the erect hairs visible in the male extremely short; scutellum nearly similar, blackish, with a pale streak parallel to the edges; elytra nearly as in *triangulifer*, except that all the spots are very small, the form also is narrower and the short arcuate shelf under the lateral swelling of the female less broad; pygidium (♂) more elongate, more convex, less punctate and with fewer erect hairs, or (♀) much smaller, less transverse and very much nore acutely rounded at tip, though nearly similar in sculpture and in the rather sparse erect hairs; legs, tarsi and under surface nearly similar. Length (♂ ♀) 18.5–20.5 mm.; width 8.0–10.0 mm. Mexico (Guerrero),—Baron. Five examples..... ***circulifer** n. sp.

11—Body oblong-oval, rather less convex, strongly shining, dark brownish-rufous above, piceo-rufous beneath, the legs black throughout; head black throughout, slightly more than half as wide as the prothorax, sparsely and rather feebly punctate, with a median impunc-

tate line; clypeus three-fourths wider than long, feebly trapezoidal, with arcuate sides and broadly rounded angles, the sinus very feeble; edges thin, slightly reflexed; surface feebly bitumorose medially, shining, finely rugulose in wavy lines; antennal club not quite so long as the six preceding joints; mentum even, sparsely punctulate; prothorax immaculate, rufous, less than twice as wide as long, in form nearly as in *lucida*, everywhere sparsely punctate, very minutely medially, rather coarsely toward the sides and bearing distinct erect hairs; scutellum transversely ogival, having a fine eroded line of punctures at some distance within the margins, within which line there are scattered small punctures; elytra but little longer than wide, more strongly rounded behind about the middle than in the preceding section, the punctures sparse but distinct though shallow, for the most part in unimpressed lines, becoming stronger, rather dense and confused broadly toward the sides, each puncture with a distinct erect hair; lateral swelling (♀) moderate, elongate, the edge beneath it forming a short shelf, which is abruptly limited posteriorly, black, each with a large rufous area before the middle, uniting with the pale suture, which gradually disappears toward the scutellum; pygidium transverse, shining, black, finely, sparsely punctulate and with moderate sparse erect hairs, the surface finely rugulose along the base; sterna and abdomen as in the preceding sections; legs slender, the tarsi very long in both sexes. Length (♀) 17.00 mm.; width 8.7 mm. Colombia. [*Cyclocephala gregaria* Ar.] A single example marked "cotype." ..... ***gregaria** Arrow

12—Form rather narrow, cylindric-oval, very convex and shining, pale rufous, the head black, with rufous clypeus, the elytra more tawny-flavate, immaculate throughout above; under surface, pygidium and legs castaneous-red, the tarsi a little darker; head rather large, with notably prominent eyes, three-fifths as wide as the prothorax, finely and sparsely punctate, the median line with a short fossa at base; clypeus as in the preceding species in outline and fine edges, but a little shorter and with the sculpture very fine, feeble and sparsely punctuliform; suture more distinct; antennal club (♀) as long as the entire stem; mentum evenly and moderately convex, minutely, sparsely punctate; prothorax less than twice as wide as long, as in *lucida*, except that the anterior margin is more prominently arcuate at the middle, as in *circulifer*, the acute apical angles only moderately advanced; punctures everywhere sparse, very minute medially, distinct but not coarse laterally, apparently non-setulose; scutellum ogival, with scattered punctures, except in a broad smooth margin; elytra long, fully a third longer than wide, only a little wider than the prothorax, parallel, with feebly arcuate and almost even sides (♀) and without trace of the short shelf or lateral swelling of the preceding sections, evenly rounded in nearly apical half; surface with the punctures not very fine and rather close-set, only very feebly impressed and inconspicuous, hairless, confused throughout, not different in character postero-externally, each elytron with three very feeble convex discal lines; pygidium (♀) transverse, shining, finely, very remotely punctate, rugulose laterally, not pubescent,

the surface strongly tumid medially near the base, the apex rather abruptly produced and prominently rounded; marginal gutter very deep but narrow; middle coxæ even more widely separated than in the preceding sections, the abdomen not diffusedly punctate, each segment with an even, close-set, setiferous and entire discal line of punctures; legs slender but rather short, the hind tarsi (♀) longer than the tibiæ. Length (♀) 16.0 mm.; width 8.0 mm. A single example marked "Colombia," but said by Burmeister to be Brazilian. [*Cyclocephala atricapilla* Mann.]..... ***atricapilla** Mann.

As noted in several of the above descriptions, many species have distinct though short erect hairs arising from the dorsal punctures, as well as the long pygidial pubescence of the *lucida* section. I am not certain whether the name *discoidalis*, given by Chevrolat to the above variety of *lucida* and quoted in the Dejean catalogue, has ever been defined or not; it differs from *lucida*, in the female, by the stronger pronotal punctures, more developed pronotal maculation and smaller and shorter deplanate shelf under the lateral swelling of the elytra, among the more salient features. *Gregaria* and *atricapilla* are described above at some length, merely as representatives of distinct sections in the genus; to the *gregaria* section belong without doubt the Mexican *picta* of Burmeister and the Nicaraguan *conspicua* of Sharp, perhaps also *atripes* and *ligyrina* of Bates. There are probably other species belonging to the *atricapilla* section also, but I cannot quote them at present.

Anoplocephalus Schf.

In this genus the body is stout and subcylindric in form, with a notably small head and a modification of the basal part of the mentum by a large deep excavation, which, so far as known to me, is not even suggested in any other generic type of this tribe. It is also peculiar in many other features, as may be inferred from the following description of the single known species, further statement of the generic characters being unnecessary at the present time, in view of the full description given by the author (Tr. Am. Ent. Soc., 1906, p. 259):

Form stout, parallel, strongly convex, shining, black throughout above, the pygidium, entire under surface and legs castaneous; upper surface and pygidium glabrous; head small, scarcely a third as wide as the prothorax, in great part castaneous, the front tumid medially, the clypeus and front, including the tumid part, coarsely and very densely punctato-rugose, the basal parts coarsely but more discretely

punctured; clypeus nearly twice as wide as long, trapezoidal, the oblique sides feebly sinuate, becoming straight and parallel at base, the apex broadly and strongly reflexed, the sides rather more feebly, the upturned apical margin thin and with a rather deep medial sinus, the angles prominently rounded; suture wholly obsolete; eyes rather small, not at all prominent; mentum anteriorly very convex, sparsely punctate, bristling along the sides with very long fulvous setæ, the bottom of the basal concavity with finer and more flavate hairs; ligula very small, truncate; antennal club rather small; prothorax not more than one-half wider than long, strongly, evenly convex, the sides evenly rounded throughout, becoming very convergent apically and parallel basally, the apical sinus even, the angles only moderately produced and blunt at tip, the basal obtuse, moderately rounded; marginal bead fine along the sides, thick and entire at apex and base, the coriaceous apical margin not at all angulate medially; punctures rather coarse, moderately separated, finer and sparse medio-basally; scutellum notably small, impunctate, as long as wide, ogival; elytra but very little longer than wide, barely twice as long as the prothorax and slightly wider, the sides feebly arcuate, somewhat inflated except basally, rapidly very obtuse at apex, having broadly and rather strongly impressed sulciform striæ, which have rather coarse and shallow, well spaced annular punctures, the intervals finely, feebly and sparsely punctate; toward the sides the punctures are rather more confused and the series unimpressed, the flanks (♀) broadly impressed behind the humeri but without trace of other modification; pygidium with rather coarse, impressed and well separated punctures; middle coxæ subcontiguous, this region and the femora with many long bristling fulvous setæ; sterna with less coarse subdecumbent fulvous pubescence; abdomen with the usual single setigerous series of punctures, also confusedly and closely punctured toward the sides; legs long, moderately slender, the hind tarsi filiform and much longer than the tibiæ in both sexes. Length (♀) 20.0 mm.; width 11.7 mm. Arizona (Huachuca Mts. —Miller Cañon),—Wenzel..... **cribrifrons** Schf.

I owe a female of this interesting species to the kindness of Mr. H. W. Wenzel, of Philadelphia. Its general resemblance to the unique type of *Mononidia*, described above, in the form of the body, uniform black shining integuments and coarsely sulcate elytra, is rather marked, but the resemblance goes no further, the structural characters being radically different.

Ancognatha Erichs.

The deeply excavated ligular part of the mentum and the pointed ogival clypeus, well distinguish this genus from any other except *Mimeoma*, the special features of which are given under that title below. The body is above the average in point of size, the head

small, the clypeal suture completely obliterated, at least medially, except in some Sonoran species, the mentum rather convex, bristling with long stiff hairs, at least at the sides and sometimes throughout, and the mandibles are notably slender, not hidden under the clypeus, except when closed, and with the apex more or less acute and slightly turned outward. The sides of the elytra in the female are feebly or very moderately modified, though more so than in the preceding genus, and the upper surface is less convex than in any of the preceding genera; the elytra are very feebly and minutely sculptured or smooth, except in *humeralis*, where the punctures of the feebly impressed, irregular series are notably coarse and impressed. The legs are moderately slender, the hind tarsi long and filiform. Besides the tropical *scarabæoides*, *erythrodera*, *ustulata* and *æquata*, which I have before me, this genus will include the following Sonoran species:

Tibiæ and tarsi black or blackish. Body oblong-oval, evidently inflated posteriorly, deep black, very shining, the basal and lateral edges of the pronotum—enlarged at apex into a subquadrate spot—and the elytral suture and two or three narrow feeble discal streaks on each elytron testaceous; under surface, pygidium and femora flavate, the metasternum and abdomen, excepting the last segment, black; head not quite half as wide as the prothorax, deep black throughout and in great part alutaceous, sparsely and very finely punctate, the clypeus large, evenly parabolic, one-half wider than long, broadly, feebly impressed and rather more closely punctate throughout the periphery, the edges finely beaded and slightly reflexed, more so and thicker at apex; suture nearly straight, obsolete medially, deep at each side; antennal club three-fourths as long as the stem; prothorax three-fourths wider than long and four-fifths as wide as the elytra, the sides rounded rather more prominently at the middle; apical angles very acute and sharp, the basal obtuse and moderately rounded; basal bead very evident near the sides; surface moderately convex, very minutely, sparsely punctate throughout; base broadly arcuate, not definitely lobed; scutellum moderate, ogival, finely, sparsely punctate, black, pallid near the margins; elytra a fifth longer than wide, broadly and obtusely rounded at apex, almost smooth, the minute punctures barely visible but sometimes with three feeble geminate series rather evident, the surfaces of which form the imperfect pallid streaks; pygidium distinctly but sparsely, unevenly punctate and with long sparse erect hairs; sterna and middle femora with rather abundant long fine pale hair; abdomen, excepting the transverse series, subimpunctate, punctured laterally; hind tarsi (♂) much longer than the tibiæ. Length (♂) 17.0–19.5 mm.; width 9.6–11.0 mm. Mexico (Durango City),—Wickham.
***durangoana** n. sp.

Tibiæ and tarsi always more or less pale, the anterior tarsi darker in the male as a rule; pygidium and entire under surface very pale ochreous yellow, the metasternum and abdomen, excepting the last segment, a little darker brown in the male.....2

2—Clypeal suture fine but very distinct throughout the width, strongly sinuous medially; hind tarsi notably long, very much longer than the tibiæ. Body (♂) oblong-oval, very shining, dark red-brown above, the pronotum broadly, except at the middle, and the base narrowly, flavate; elytra black, with one or two short external pallid streaks; head half as wide as the prothorax, the surface throughout very even and but slightly convex, finely but deeply, loosely punctate and notably shining in every part; clypeus large, one-half wider than long, semicircular but with the median, more reflexed part of the apex a little more parabolic in curvature; antennal club but little longer than the preceding six joints; prothorax broad though not quite twice as wide as long, five-sixths as wide as the elytra, in form nearly as in the preceding, the very fine sparse punctures rather more evident but with the sides barely more prominent medially; scutellum pale ochreous throughout, the sparse punctures extremely minute; elytra as in the preceding species, nearly smooth but with the three feebly defined geminate series on each rather more evident; pygidium nearly similar; abdomen with rather strong diffused close-set punctures throughout basally, as well as laterally; large claw-joint of the anterior male tarsi almost as long as all the others combined. Length (♂) 17.7 mm.; width 9.5 mm. Arizona (Prescott). A single male example.....**perspicua** n. sp.

Clypeal suture obsolete medially; entire surface of the head generally more or less alutaceous, with moderately small but deep, loose punctuation; scutellum pale, with brownish margins as in *perspicua;* general coloration and shining lustre throughout nearly as in that species, excepting the elytra of *zuniella;* hind tarsi not so long as in the two preceding species.....3

3—Form stout and oblong-oval as in the two preceding species, the coloration as in *perspicua;* head about half as wide as the prothorax, the clypeus (♀) semicircular, with slightly more paraboloid apex, nearly twice as wide as long, or (♂) not quite so transverse and with the sides becoming nearly straight and subparallel in about basal half; surface of the front rather abruptly sloping to the upper margin of the eyes; antennal club very moderate, not differing much sexually; prothorax two-thirds wider than long, the sides broadly rounded, becoming parallel and straighter—viewed dorsally—in about basal half, converging and nearly straight apically, differing in this way very decidedly from *perspicua*, where they are subevenly rounded from base to apex and widest near the middle; apical angles less advanced and blunter at tip than in either of the preceding; basal margin more evidently lobed medially; marginal bead distinct toward the sides; surface smooth, the sparse punctures excessively minute throughout; elytra a sixth longer than wide, relatively much wider than in *perspicua* and fully two-fifths wider than the prothorax, slightly inflated posteriorly, very broadly obtusely rounded at apex;

surface rather uneven, minutely, remotely punctate; sides (♀) feebly, longitudinally impressed beneath the humeral callus, the edge from basal sixth to the middle very narrowly and gradually explanate, not laterally prominent; pygidium strongly transverse, ochreous, almost impunctate and glabrous, except near the base and transversely near the apex, where the punctures become distinct, each bearing a moderate hair; surface rather more convex in the male; abdomen with confused punctures, bearing rather fine hairs throughout, decidedly close-set basally and broadly toward the sides but everywhere less coarse than in *perspicua;* hind tarsi shorter in both sexes, but little longer than the tibiæ; claw-joint of the anterior male tarsi shorter than in *perspicua* and much shorter than the first four joints combined. Length (♂ ♀) 17.5–20.5 mm.; width 9.5–11.0 mm. Arizona (Oak Creek Cañon and Huachuca Mts., also "southern Arizona"—Snow). Five examples. [*Cyclocephala manca* Lec.]

manca Lec.

Form narrower and more ovoidal, rather convex, shining, similar in coloration, except that the elytra have the piceous-black shading off very gradually and broadly toward the suture into a piceo-rufous tint; head relatively a little larger, slightly more than half as wide as the prothorax, the rather sparse punctures becoming much closer in the broadly concave contour of the clypeus, the latter however being lost at the base of the clypeus, which is three-fifths wider than long, the sides straight and feebly converging from the base to rather beyond the middle, there rounded, thence nearly straight and strongly converging to the broadly parabolic and reflexed apex; suture effaced medially but traceable as a feeble sinuous convexity of the surface; antennal club a little longer than the six preceding joints; prothorax throughout nearly as in *perspicua* but with the base more definitely lobed medially, the lobe truncate; scutellum smaller than usual, smooth, pallid; elytra nearly a fourth longer than wide, more than a third wider than the prothorax, the sides rather more arcuate, the apex more rounded in posterior two-fifths; surface with minute sparse punctures, some of which form irregular lines; flanks scarcely at all modified in the female, the edge narrowly and gradually explanate from basal fourth to a little behind the middle; abdomen with the punctures disposed as in *manca* (♀), sparser than in the male; hind tarsi more slender, not longer than the tibiæ. Length (♀) 17.5 mm.; width 9.5 mm. New Mexico,—F. H. Snow. One specimen.....**zuniella** n. sp.

In this genus the post-coxal process of the prosternum is short, with the tip flattened and posteriorly arcuate to external view, with a rounded and more pallid knob sunken slightly into the anterior part of the flattened tip. There is some variation in the acuteness and sharpness of the apical thoracic angles in *manca*. There is also considerable variety in the form of the clypeus throughout the genus; while generally having a pointed tendency, it sometimes

becomes notably obtuse and rounded at tip; the form of the clypeus is therefore much less important as a generic character than the structure of the mentum and certain other more general characters.

Mimeoma n. gen.

The chief characters separating this genus from the preceding are the widely separated middle coxæ, with flat subglabrous descending interspace, virtually glabrous under surface of the body, laminate and not expanded post-coxal process of the prosternum and the nature of the female sexual characters. The antennæ are still smaller than in *Ancognatha* and the clypeal suture, though fine, is evident throughout the width, sinuous medially but not at all deeper at the sides; the surface of the head, also, does not rapidly ascend above the upper margin of the eyes. The body is very much smaller in size than in any known *Ancognatha*. In the female the sides of the elytra are much swollen behind the middle, the general swelling bearing a rounded smooth tumor at apical two-fifths of the elytra, the edge below the swelling narrowly and gradually explanate, with slightly thickened bead. The type is the *Cyclocephala maculata* of Burmeister, occurring in Cayenne and in the Amazon regions.

Diapatalia n. gen.

The type of this genus is a small species, closely resembling a narrow *Cyclocephala* to external view, in habitus and ornamentation, but having a strongly sinuate clypeus and still more conspicuous female sexual characters; the mento-ligular plate is rather convex parallel, evenly rounded at the sides, deeply excavated at tip, which is not laterally contracted though following the curvature of the sides to the apex, and the apex is angularly sinuate between the short and sharp but unprolonged angles; at some distance from each side of the plate there is a regular line of coarse punctures bearing inconspicuous erect hairs. The under surface of the body is glabrous, the intermesocoxal surface rather wide, flat and anteriorly sloping, and the erect antero-posteriorly compressed post-coxal process of the prosternum is also as in *Mimeoma*. Additional characters are alluded to in the following description of the only known species:

Body elongate, very moderately convex, strongly shining, glabrous, flavate, piceous beneath, the head and pronotum black, the latter pale at the sides and sometimes along the base medially, extending thence faintly along the median line for some distance; clypeus rufous; elytra with the suture, finely margining the scutellum, a humeral and post-medial, more internal, dash, and part of the lateral swelling of the female, black; pygidium blackish, the legs and tarsi rather pale in color; head three-fifths as wide as the prothorax, shining, rather strongly and closely punctate from the suture, the punctures becoming gradually very fine and sparse basally; clypeus flat, as long as all the posterior part, trapezoidal, with arcuate sides, not quite twice as wide as long, the angles much rounded into the rounded apical lobes; margins fine and slightly elevated, thickened around each of the lobes; surface with well spaced and very irregular, transversely interlacing rugulæ, the suture fine but distinct, entire, sinuate medially; antennal club barely more than twice as long as thick; eyes moderate but rather strongly convex; prothorax scarcely one-half wider than long, the sides parallel and very evenly rounded, gradually a little more converging anteriorly to the acute and very sharply pointed angles, the basal very broadly rounded; base broadly arcuate, not definitely lobed, having a fine entire bead, which is also very fine along the lateral margins but wider and flat at apex; surface with fine, sparse but distinct punctures, still stronger and less sparse laterally; there is a small punctureless discal area at each side of the middle anteriorly; scutellum pale, fully as long as wide, unusually acutely triangular; elytra nearly a third longer than wide, at the swelling—at three-fifths—a fourth or fifth wider than the prothorax, circularly rounded at apex, having small, shallow and not very sparse confused punctures, with two or three geminate series more or less distinct on each; humeral swelling in the form of a long ridge, which also reappears toward apex; below the humeral ridge a more slender ridge begins and terminates, becoming larger, at the end of the lateral swelling (♀); edge below this ridge serrate and with short spiniform setæ; pygidium rather convex, shining, finely, rather closely, shallowly and very irregularly punctulate throughout, slightly tumid at the narrowly rounded apex; abdomen impunctate, excepting the single loose transverse line of setigerous punctures on each segment, extending across the middle; legs slender, the tarsi long and filiform; hind tibiæ much shorter than the femora. Length (♀) 12.8–13.0 mm.; width 6.2 mm. Isthmus of Panama (Culebra), —Gaillard. Two examples. . . . . *discicollis Arrow

The relatively rather large head in this species might seem to indicate a relationship with *Mononidia* and *Stigmalia*, but its affinities are otherwise so clearly with *Ancognatha*, because of the excavated ligula, and with *Cyclocephala*, because of the general habitus and ornamentation of the body, finely margined pronotal base and other characters, that there can be scarcely any doubt of the

propriety of placing it near the latter genus. In the strongly sinuate bilobed clypeus it differs greatly from either of the genera mentioned.

Spilosota n. gen.

The type of this genus is not remarkable in any way in its general aspect and might readily be passed over as a *Cyclocephala* allied to *complanata*, but the mentum is of a type wholly different from anything else in the tribe and probably only approached by that of *Democrates*. The clypeus also is very different from that to be seen anywhere in *Cyclocephala* proper and approaches rather that of the upper Sonoran *Ochrosidia*, so abundant in species north of the Mexican boundary. The known species may be described as follows:

Elytra glabrous, the feeble brownish mottling rather sharply defined. . . 2
Elytra sparsely and more or less inconspicuously setulose, the mottling, when visible at all, very indefinite. 3

2—Body stout, oblong-oval, moderately convex, shining, glabrous except on the sterna, pale flavate-brown in color, the legs, excepting the minutely black knees and the outer edge of the anterior tibiæ, concolorous; head rufous, brown at the basal margin; pronotum pale red-brown, broadly flavate-brown laterally; elytra pale red-brown in a large elongate discal area on each, bifurcating basally, the outer ramus slender, and unequally incised apically, the suture and outer third flavate-brown; head small, scarcely two-fifths as wide as the prothorax, with well developed and slightly convex eyes, coarsely and densely punctato-rugose but shining, abruptly finely, sparsely punctate at base; clypeus short, twice as wide as long, in general outline semicircular but with a small sinus at each side of the rounded median part of the apex, which is notably reflexed; suture fine, not distinct, strongly sinuate medially; mandibles slender, slightly pointed externally at apex; antennal club small, only as long as the five preceding joints, which form a slender funicle, the sixth and seventh joints not wider than the preceding; prothorax nearly twice as wide as long, the sides broadly arcuate, converging in apical, parallel and nearly straight in basal, half, viewed dorsally, the apical angles only briefly produced but acute and sharp, the basal moderately rounded; base arcuate, very feebly lobed medially and with a fine strong entire bead, the lateral margin very fine; punctures rather fine but distinct, remote, less sparse and somewhat coarser laterad; scutellum ogival, wider than long, nearly smooth; elytra scarcely visibly longer than wide, parallel, abruptly and very obtusely arcuate at tip; only slightly wider than the prothorax, the sides (♀) slightly impressed below the large humeral callus but with barely a vestige of medial modification of the edge, which however bristles with long stiff hairs from base to apex, arising from small punctures

sparsely spaced along the beading; punctures not coarse but very distinct, partially arranged in rather impressed series, which are more close-set, unimpressed and more coarsely punctate toward the sides, finer postero-laterad; pygidium about one-half wider than long, triangular, having the lower angle broadly rounded, the surface rather convex, shining, very finely, sparsely punctate, subrugulose laterad; abdomen impunctate, excepting a single entire transverse line of setigerous punctures on each; hind tarsi slender, distinctly longer than the tibiæ, which are much shorter than the femora. Length (♀) 13.7 mm.; width 7.7 mm. Mexico (Durango City),—Wickham . . . . . *__nubeculina__ n. sp.

Body less stout, shining, elongate-oval, strongly convex, pale brownish-flavate, the legs and entire under surface still paler flavate; head rufous throughout, or blackish, with the clypeus obscure rufous; pronotum with two dark red-brown vittæ, broader basally, parallel internally, with the outer contour biemarginate, the sublateral dark dot evident; scutellum pale, rather wider than long, with scattered small punctures; elytra dark red-brown, with a pale flavate sublateral vitta, the area thence to the sides nubilously blackish-brown except basally; head (♀) not quite half as wide as the prothorax, variably punctate but rather strongly, the clypeus twice as wide as long, the sides parallel and rounded basally, thence oblique and nearly straight to the more arcuate and reflexed apex, which is about half as wide as the base, shining but densely, confluently punctate, the suture strongly sinuate at the middle; eyes well developed; antennal club not as long as the six preceding joints; prothorax two-thirds or more wider than long, the sides strongly, evenly arcuate, a little more converging apically, the apical angles short but sharp, the basal rounded; basal margin with a fine entire bead, but with the bead broadly obsolete medially in another example; punctures sparse, small but distinct, becoming larger though shallow laterally, fine and sparse throughout in the second example; elytra slightly elongate, about a fifth wider than the prothorax, parallel, with arcuate sides and obtusely rounded apex; punctures strong, partially in series; lateral margin (♀) feebly arcuate for a short distance at the middle, not otherwise modified; pygidium feebly punctato-rugulose, subalutaceous, glabrous; sterna with rather fine, moderately long, decumbent and not at all dense hairs. Length (♀) 13.0–13.5 mm.; width 7.0–7.4 mm. Arizona (Douglas, Cochise Co.) [*Cyclocephala lurida* Bland] . . . . . __lurida__ Bland

3—Elytra brownish-rufous, clearer flavate near the scutellum and broadly toward the sides. Body stout, oblong-oval, convex, moderately shining; pubescence of the elytra and pygidium (♂) persistent, rather long and distinct, virtually wanting (♀); head small, much less than half as wide as the prothorax, rufous, sometimes blackish basally, rather closely punctate, more sparsely (♀), the clypeus two-thirds wider than long, shorter in the female, in outline, sculpture and apical reflexion nearly as in the preceding, the suture distinct, strongly sinuate in about median half, less in the female; antennal club (♂) as long as the preceding six joints, or (♀) much

shorter than in the male; prothorax three-fourths wider than long, the rounded sides becoming subparallel in fully basal half, strongly converging apically, the short apical angles sharp but more than right, the basal only moderately rounded; fine basal bead obsolete medially; surface sometimes indefinitely clouded in two large discal spots, with the sublateral dark dot distinct; punctures not very small, deep, distinct and only moderately sparse, only slightly larger laterad; elytra short, but little longer than wide, only slightly wider than the prothorax, obtusely rounded at apex; punctures rather strong and close-set, uneven, partially in series, the geminate lines impressed; lateral margin (♀) not modified, having a very feeble sinuation in both sexes near basal third; first four abdominal segments equal, short, each distinctly shorter than the fifth in both sexes; larger claw of the anterior tarsi (♂) unequally cleft at apex, the slender ramus apparently broken off at the base in the single male at hand. Length (♂ ♀) 11.0–15.0 mm.; width 6.0–8.4 mm. California (San Diego). [*Cyclocephala hirta* Lec.]. . . . . **hirta** Lec.

Elytra paler flavate-brown, each with a narrow, very irregular oblique brown vitta medially, which is very widely interrupted. Body rather longer, oblong-elongate, strongly convex, rather shining, pale and uniform yellow-brown in color throughout, the outer edge of the anterior tibiæ deep black as usual; head less than half as wide as the prothorax, blackish, the clypeus bright rufous throughout, nearly as in the preceding, except that the frontal punctures are mingled with numerous smaller punctures; antennal club (♂) a little longer than the preceding six joints; prothorax very evidently less transverse, the sides feebly converging and broadly arcuate from base to apex, the basal angles more broadly rounded; basal bead entire; punctures everywhere strong and distinct, larger and rather dense toward the sides; ground color uniform; median line feebly impressed; scutellum with numerous punctures bearing long hairs; elytra nearly as in the preceding but more elongate, with smaller and sparser punctures and even more distinct pubescence throughout; pygidium with similar long erect conspicuous yellowish hairs; hind tarsi (♂) nearly one-half longer than the tibiæ; abdomen as in the preceding but with still shorter sixth segment. Length (♂) 16.0 mm.; width 8.4 mm. Southern California. . **magister** n. sp.

Elytra without any definite or constant trace of nubilate maculation, the elytral setæ sparser and still less obvious, easily removed. 4

4—Body very stout, oblong, convex, very variable in size, rather shining, pale yellow-brown in color throughout, the head as in the preceding, piceous-black, rather strongly, discretely punctate, with some minute punctures intermingled; clypeus dark rufous, fully twice as wide as long, the sides parallel basally, sinuato-oblique thence to the rounded and strongly reflexed apex; punctures rather coarse and dense but not very deep; median line frequently feebly impressed, the suture sinuate medially, narrowly (♂), broadly (♀); eyes not differing much sexually, in the female separated by two and one-half times their width; antennal club (♂) fully three-fourths as long as the stem, not differing much in the female; prothorax three-fifths to

two-thirds wider than long, in outline and sculpture nearly as in the preceding species, the basal bead very feeble and only well defined near the sides; scutellum rather wider than long, ogival, with distinct scattered punctures and a few hairs; elytra short, barely at all longer than wide, very little wider than the prothorax, rapidly and very obtusely rounded at apex, coarsely subrugose, strongly but sparsely, very unevenly punctate, the three costæ feebly convex and not sharply defined; lateral edge very broadly, feebly sinuate near basal third in both sexes; pygidium (♂) rather closely punctate and with moderate erect hairs, or (♀) more shining, sparsely punctate and glabrous; hind tarsi (♂) one-half or (♀) one-fifth longer than the tibiæ, the tibial spurs slender in the former sex, short and stout in the latter. Length (11 ♂, 8 ♀) 9.5–14.5 mm.; width 5.6–7.8 mm. Arizona, New Mexico and Western Texas. Abundant. **pallidissima** n. sp.

Body smaller in size and much narrower, very pale flavate in color throughout and rather shining; head a little larger, about half as wide as the prothorax, pale rufous throughout and somewhat strongly but not closely punctate; eyes notably large, convex and prominent, separated by distinctly less than twice their width; clypeus of the same general form and dense rugulose sculpture, but with the apex broadly and much less strongly reflexed; sinus of the suture nearly half the total width; antennal club shorter than in the female of *pallidissima;* prothorax two-thirds wider than long, more convex, the sides parallel and strongly, evenly arcuate, converging basally but more strongly apically; punctures strong but sparse throughout; basal bead broadly obliterated medially; scutellum nearly similar, rather sharply ogival; elytra more elongate, about a fifth or sixth longer than wide, more circularly rounded in about apical third, the sculpture and lateral edges nearly similar but with the erect hairs sparser and so short as to be discovered only with difficulty; pygidium glabrous, finely, closely, irregularly sculptured laterally, sparsely punctate medially; sternal vestiture fine, sparse and very inconspicuous; tarsi similar, very slender. Length (♀) 9.2 mm.; width 5.1 mm. California (Needles),—Wickham. . . . . **inconspicua** n. sp.

Pallidissima is allied to *hirta*, differing in the shorter clypeus, much smaller medial sinus of the suture in the male, more broadly rounded basal thoracic angles and constant absence in a large series of any definite darker elytral mottling; they both differ from *inconspicua* in the smaller eyes and less rounded sides of the prothorax. The larger anterior male tarsal claw of this genus is very unequally split at apex, the outer ramus being very short and extremely slender, so that it is frequently broken off. It is singular that the true systematic value of *Cyclocephala lurida* Bland, has been so long misunderstood; it is not even generically the same as *immaculata*. with which it is now united.

Cyclocephala Latr.

As here restricted, this genus is composed of a considerable number of species occurring exclusively in the tropical regions of the American continents, and they all have the posterior edge of the pronotum minutely and completely beaded and in a singularly constant fashion, giving an appearance of a duplex edge, which character is shared also by *Diapatalia*, *Spilosota*, *Halotosia* and *Aclinidia*, but is completely wanting in *Ochrosidia*, *Diachromina* and *Homochromina*, although the last three may have a feeble beading occasionally toward the sides of the base; it is the constant entirety of the fine bead throughout the width that is so conspicuous and characteristic a feature of the present genus and the first four just mentioned. *Cyclocephala* may be separated into a number of marked subgenera, of which the three following can be defined at this time:

Anterior tibiæ of both sexes strongly and subequally tridentate; body moderately convex, the elytral ornamentation obliquely lineate nearly throughout the length, the pronotum never vittate; marginal modification in the female feeble, simple and confined to a slight thickening and very narrow deplanation of the edge; tarsi notably short and slender in the female; scutellum ogival, rather wider than long.....Group I

Anterior tibiæ of the male simply bidentate, the upper of the usual three teeth rarely visible as a very feeble vestige, normally tridentate in the female; tarsi notably elongate in both sexes; scutellum more pointed, slightly elongate.....2

2—Body having the normal convexity of the tribe; male with the first four abdominal segments and the sixth equal in length and very much shorter than the fifth segment; elytra with ornamentation consisting of two subbasal and one post-median black spots, somewhat as in the following group; pronotum not vittate....Group II

Body of more feeble convexity, somewhat as in *Diapatalia* and similarly with very conspicuous marginal modifications of the female elytra; pronotum with two black vittæ, the elytra with various modifications of two subbasal and one post-medial black markings; male with the abdomen similar in the sexes and with the segments subequal among themselves.....Group III

The typical species of these three groups, considered in order, are *complanata* Burm., an apparently undescribed species from Mexico, and *signata* Drury. *Stictica*, which belongs to the third group, was widely separated by Burmeister from its allied forms and placed near *lucida*, which it does not in the least resemble, merely because

of an occasional very feeble sinuation of the clypeal apex. Mr. Bates has already called attention to this in the Biologia.

Group I.

Subgenus **Plagiosalia** nov.

The pronounced peculiarities in the structure of the anterior tibiæ, scutellum and female elytra would seem to afford ample ground for subgeneric separation from the typical *Cyclocephala*, as represented by *signata* and allied forms; in addition, there is much greater difference between the male and female tarsi and the system of coloration also does not agree. Besides *complanata*, the subgenus will include the two following species:

Form oblong, stout, rather convex, shining, glabrous, pale brownish-rufous above and beneath, the legs concolorous; head gradually blackish basally; elytra, in the least developed degree of ornamentation, having a broad discal oblique vitta from the humeri nearly to the apex and a narrow and perfectly even sutural vitta, both of piceous-black, then the sutural vitta begins to broaden basally and a brown side margin appears, the oblique and sutural vittæ then broaden and, in the majority of individuals, completely coalesce; finally the entire elytra are black, excepting a broad sublateral streak, not attaining base or apex, and an apical remnant of the space between the sutural and oblique vittæ; head small, closely but not coarsely punctato-rugulose, abruptly sparsely punctate at base; clypeus nearly twice as wide as long, a little less (♂), trapezoidal, with arcuate sides, obtuse rounded angles and feebly arcuate, slightly reflexed and somewhat thickened apex; suture obliterated medially; antennal club small in both sexes; pronotum three-fifths (♂) to three-fourths (♀) wider than long, the sides rounded, converging anteriorly to the very acute and prominent angles, the apical sinus deep; basal angles broadly rounded; base with a very faint truncate median lobe; ambient bead entire and black throughout the periphery; punctures small and sparse, more distinct laterad; scutellum barely as wide as long, acutely ogival, nearly smooth, pale, with infumate margin even in the most feebly colored individuals; elytra about a fifth or sixth wider than the prothorax, parallel, with feebly arcuate sides and circularly rounded apex, the fine punctures serial except suturad and laterad, finer laterad in the male than in the female; pygidium (♂) strongly transverse, almost punctureless but finely chagrined, or (♀) less transverse, shining and with distinct punctures, which become dense laterad; abdomen nearly smooth, with the usual transverse lines of punctures, the last segment (♀) with scattered coarse punctures, wanting on the much shorter corresponding segment of the male; sterna with moderate pale pubescence. Length (♂♀) 11.5–14.5 mm.; width 6.8–8.0 mm. Honduras (San Pedro Sula). Twelve examples. . . . . *__obliquata__ n. sp.

Form narrower and more convex, cylindric-oval, shining; coloration similar, except that the oblique discal vitta is not more than half as wide and pale brown, and the sutural vitta becomes much dilated basally; head similar, except that the front is not rugulose but discretely punctate, the punctures becoming gradually sparse and very fine basally; clypeus densely and rather more finely punctato-rugulose, much narrower in form, about two-fifths wider than long, similar in outline, the edges more abruptly and strongly reflexed, the suture not obliterated medially and there sinuate; prothorax similar but longer, barely one-half wider than long, the apical angles less acute; scutellum smaller, still more acute at apex; elytra but very little wider than the prothorax, nearly a fourth longer than wide, otherwise nearly similar; pygidium (♂) similar but with the minute punctures basally bearing erect hairs, which are easily distinguishable though short and fine; in *obliquata* they are extremely minute; abdomen similar but with coarser, denser, more scabrous punctuation at the sides; sternal pubescence finer and not conspicuous. Length (♂) 12.8 mm.; width 6.5 mm. Mexico (Jalapa). One example.
***emacerata** n. sp.

Both of these species, which are amply distinct between themselves, differ from *complanata* in their much smaller size and *emacerata*, at least, in the more convex surface.

Group II.

Subgenus **Isocoryna** nov.

In many ways, as in type of elytral ornamentation, setigerous punctures of the upper surface and pubescent pygidium, punctuation of the head and tibial structure, the single species of this subgenus is much more closely allied to *Cyclocephala signata* than it is to the preceding subgenus, but the upper surface is very convex, which, with the stouter oblong outline, gives it a very different habitus. In the structure of the male abdomen, as stated above, it is quite isolated. The type may be defined as follows:

Body stout, oblong-oval, convex, shining; head black, the clypeus barely at all paler; pronotum pale flavate, without maculation, the elytra still paler, each with three black spots, two at basal fourth, the third on the median line post-medially and irregular, being transversely reniform; pygidium blackish, with a nubilous red median vitta; under surface throughout piceous-black, the legs castaneous, the hind tibiæ darker and the hind tarsi black; head small; front finely, closely punctate, the punctures laterally becoming coarse, deep and setigerous; base almost smooth; clypeus one-half wider than long, trapezoidal, with feebly arcuate sides, rounded angles and broadly arcuate, gradually and feebly reflexed, finely margined apex; erect

side margins very fine; suture evident, narrowly sinuate at the middle; surface flat, very confusedly, not finely but shallowly punctato-rugose, bristling throughout with fine erect setæ; prothorax three-fourths wider than long, the sides evenly rounded, more converging apically, the angles acute, the sinus arcuate at the middle; basal angles broadly rounded, the base and entire ambient bead as in the two preceding species; surface very unevenly punctate, the punctures coarse and setigerous broadly toward the sides and at apex medially, elsewhere scattered, coarse and smaller and sparser; at lateral fourth, near the apex, there is a punctureless area; scutellum acute, longer than wide; elytra barely at all wider than the prothorax, only slightly longer than wide, parallel, circularly rounded at apex, with coarse though rather shallowly impressed, well separated punctures, partially in irregular lines, closer and fine near the sides; pygidium triangular, densely micro-scabriculate and, basally, with small asperate punctures; erect hairs long but not dense; sterna with moderate pubescence; abdomen with the usual lines of punctures. Length (♂) 14.8 mm.; width 8.0 mm. Mexico (Jalapa).

***jalapensis** n. sp.

A single specimen, received some years ago from a correspondent in the National Museum of the City of Mexico; it does not seem to be allied closely to any described species. The larger claw of the anterior male tarsi is very unequally cleft at tip, the slender ramus not extending as far as the obtusely rounded apex of the thick part of the claw.

Group III.

Subgenus **Cyclocephala** in sp.

The remarkable modifications of the anterior tarsi and larger claw in the males of this group, exhibit an unexpected diversity among the various species and afford most excellent criteria for the estimation of specific value, showing, among other things, that a considerable number of species have been too hastily confounded because of general external resemblances. It is probable, for example, that the West Indian *signata* does not occur in Central America, but is replaced there by several allied forms. The mentum is decidedly large, flat or feebly concave and has a feeble ridge, parallel to and at some distance from each side, bearing long erect setæ; the ligular part is abruptly constricted but is not very narrow; the mandibles are slender and usually somewhat everted distally, and the antennal club is small in both sexes. The significance of the minute and very regular strigilation, well developed as a rule on parts of the last three joints of the anterior male tarsi,

is rather difficult to surmise; it can scarcely be a stridulating apparatus and is more probably a roughening designed to secure a less slippery hold in copulation. Besides the true *signata* Drury, *collaris* Burm., and *detecta* and *microspila* of Bates, which I do not have among my material at present, the group is composed of the following species:

Larger claw of the anterior male tarsi very unequally cleft at apex, the slender ramus extending about as far as the tip of the large lower part of the claw, which is obliquely truncate at tip; distal parts of the third and fourth joints of the tarsus and an elongate area on the irregular but non-cavernous under surface of the fifth joint, minutely and regularly strigilate. Body oblong-oval, feebly convex, shining, none of the punctures of the upper surface setigerous, the punctures of the front fine, sparse and uniform, not coarser toward the sides; pronotum with the usual two black vittæ of the group, the elytra each with two subbasal and one post-median black spots, the suture also black; pygidium (♂) thickly clothed with very long pubescence, or (♀) blacker in color, alutaceous, with the erect hairs sparse, stiff, very short and not readily observable. Length (♂♀) 14.0–14.5 mm.; width 7.0–7.3 mm. Brazil.....*variabilis* Burm.

Larger claw not split at apex and without trace of a slender ramus....2

2—Upper outline of the larger claw evenly and unbrokenly arcuate from base to the acute though blunt apex. Body oblong-oval, more convex than in *variabilis* and larger, nearly similar in coloration and ornamentation, the clypeus almost similar but more rectilinearly truncate at tip, sometimes very feebly sinuate; punctures toward the sides of the front coarse and setigerous, these setæ, as well as those borne by the larger thoracic punctures, excessively short; prothorax of the usual form, transversely elliptic, deeply sinuate at apex; scutellum longer than wide, very acutely pointed as in the other species; pygidium (♂) finely, very evenly punctate and with short stiff erect sparse setæ throughout, or (♀) glabrous and very shining, punctured toward the sides; apices of the third and fourth joints of the anterior male tarsi and a very large area on the flat under surface of the fifth joint, finely and closely strigilate; lateral swelling of the female elytra strong and smooth, the edge beneath it evenly arcuate, not at all sinuate. Length (♂♀) 15.0–16.0 mm.; width 7.3–8.4 mm. Mexico (Jalapa).....*stictica* Burm.

Upper outline of the larger claw broadly and obtusely but sharply and conspicuously angulate at about distal third of the length.....3

3—Male with the sides of the front more coarsely punctate and bearing short and very thick, erect setæ only very near the eyes; clypeus of the same sex nude and with fine dense even sculpture, except mediobasally, where the punctures are distinct and separated, as they are at the anterior margin of the front. Body oblong-elongate in form, only feebly convex, shining; under surface, pygidium and legs red-brown, the abdomen and pygidium sometimes nearly black, independently of sex; head black, small, the vertex medially and base

finely, sparsely punctate, the front (♂) very near the eyes closely, strongly setigero-punctate but not in the female; clypeus (♂) large, subquadrate, opaque, red-brown, one-half to two-thirds wider than long, the sides becoming parallel basally, the angles rounded and the apex broadly, feebly arcuate, the edges narrowly reflexed, the apex but little more, the surface very finely scabrous except mediobasally, or (♀) shorter, otherwise similar, except that the surface is shining and more coarsely, intricately rugulose very evenly throughout; prothorax (♂) less than one-half, or (♀) fully three-fifths, wider than long, with evenly rounded sides, gradually converging apically, having two broad externally medio-prominent black vittæ from apex to base; punctures minute and sparse, mingled at the sides only with many coarse deep punctures bearing very short thick black setæ (♂) , or (♀) without trace of such coarse punctures or setæ, the punctures laterally being only a little larger than medially; elytra (♂) oblong, a fifth or sixth longer than wide, feebly inflated and broadly rounded posteriorly and barely at all wider than the prothorax, or (♀) inflated strongly at the sides behind the middle and there fully a third wider than the prothorax, the edge below the irregular swelling with a long, shallow and very even sinus, with black adjoining surface and with the surface posterior thereto minutely, densely sculptured and opaque; in both sexes the elytral maculation is nearly as in *stictica*, except that the inner of the subbasal spots is a long slender oblique line from the middle of the base nearly to and on the middle of the suture, which is not darker in color except at the fine sutural beading; punctures very fine, sparse, in great part linearly arranged, stronger and with the series more impressed in the female; toward the sides and suture there are some slightly larger, widely spaced serial punctures bearing very short setæ, largely wanting in the female; pygidium (♂) alutaceous and with small asperate punctures bearing long close-set fulvous hairs, or (♀) smooth, feebly alutaceous, with very minute sparse punctures bearing very small inconspicuous hairs. Male with the third and fourth joints of the anterior tarsi strigilate at apex, the produced apex of the fourth with a particularly large and dense area of strigilation, the fifth joint very deeply concave beneath throughout its length, not strigilate at all at the bottom of the concavity but with its thin outer wall bearing some such close-set lines along its lower edge. Length (♂♀) 13.5–15.0 mm.; width 6.3–7.5 mm. Female smaller and narrower than the male. Honduras (San Pedro Sula). Five examples..... ***multiplex** n. sp.

Male with the sides of both front and clypeus more coarsely punctate than the median parts and setose; female without the lateral coarse punctures or setæ and with the clypeus uniformly and rather coarsely though shallowly punctato-rugose (*signata* section).....4

4—Pronotal vittæ with their outer outline evenly arcuate. Body (♂) oblong, subparallel, moderately convex, strongly shining; head black at base, the remainder pale, the clypeus one-half wider than long, the sides becoming parallel at base, rounding and feebly converging anteriorly, the apex broadly arcuate; suture fine and almost per-

fectly rectilinear; prothorax one-half wider than long, the sides strongly rounded, converging anteriorly, the deep apical sinus somewhat prominent and arcuate at the middle; apical angles very acute, the basal broadly rounded as usual in this section; punctures fine but distinct, sparse, the intermingled coarse punctures laterad distinctly setulose; scutellum very acute, pale; elytra a fourth longer than wide, circularly rounded in apical half, barely at all wider than the prothorax, black, brownish on the flanks, where there is a longitudinal streak of flavate; on each, there is an oblique and posteriorly pointed flavate spot very sharply defined at each side of the scutellum; punctures strong, not close; two geminate series on each rather impressed; pygidium, legs and entire under surface, flavate-brown, the pygidium hairy; metasternum coarsely punctate throughout, except before the hind coxæ and in the median canaliculation; third and fourth anterior tarsal joints strigilate at apex, the fifth obliquely impressed beneath but not strigilate. Length (♂) 14.0 mm.; width 6.7 mm. A single example without indication of locality but in all probability the form designated by Burmeister as a variety of *signata* under the name *inconstans;* its exact relationship with typical *signata* I am unable to surmise; at any rate there is no tendency whatever for the black maculation to spread on the elytra in *multiplex*. . . . . *inconstans Burm.

Pronotal vittæ with their outer contour deeply sinuate at the middle; female smaller than the male. 5

5—Form oblong-oval, moderately convex, shining, very pale flavate throughout, the abdomen pale piceous; pubescence and setæ of the various parts nearly as in *inconstans;* head and clypeus rufous, the occiput black; clypeus a little shorter and broader than in the preceding but of the same general aspect, except that the apical part (♂) is more finely and densely chagrined and that the clypeal suture is distinctly sinuate medially; prothorax of the same general form and sculpture, except that the punctures are less distinct, slightly less (♂) to slightly more (♀) than one-half wider than long, relatively a little smaller in the female; elytra as in *inconstans* but with the punctures rather smaller and feebler, not wider than the prothorax (♂) or but slightly so (♀), each with three very minute black markings, the two near basal fourth short and slender lines, the inner more oblique and one or both often wanting; the one behind the middle minute, subtriangular and much less often wanting; lateral swelling in the female moderate, its anterior tumor short, the external sinus rather short and abruptly formed but not deep; neighboring surface dark in color; metasternum partially punctate and setulose, the setæ shorter and stiffer in the female, its general surface mottled by reason of the cellular structure showing through the pellucid integument, giving a tessellated appearance. Male with the third and fourth joints of the anterior tarsi strigilate at apex, the fifth concave longitudinally beneath, the bottom of the concavity not strigilate, the anterior wall dentate near the base. Length (♂ ♀) 12.5–14.5 mm.; width 6.5–6.8 mm. Isthmus of Panama (Colon and Culebra). . . . . *beaumonti n. sp.

Form slightly stouter, similarly shining; upper surface and legs dark castaneous in color, the pronotum rather more yellowish; head (♀) black, pale anteriorly and on the clypeus, the latter of the usual form in this section and with the rugulosity similarly transversely wavy and interlacing, the suture very fine, sinuate medially; prothorax one-half wider than long, similar to that of the preceding species, the punctures however unusually strong and distinct, with some coarse setigerous punctures near the apical angles; scutellum very acute, with some small but distinct sparse punctures; elytra with only a minute black spot behind the middle of each in the type, the lateral callus also black; punctures decidedly strong though sparse, for the most part in regular series except suturally; lateral swelling more extended and complex than in the preceding, the part near the edge behind the middle ridge-like and forming an angle, extending anteriorly in a strong ridge to basal two-fifths; the sinus of the edge below the short angulate black ridge is very short and subangulate, being deeper but not longer than in *beaumonti;* pygidium rather more punctured, with the marginal gutter around the narrowly rounded apex coarser and deeper; under surface brown, the sides of the hind body and almost the entire abdomen, black, the last segment brown and with a coarse deep median channel, which is broad at base and acute apically. Length (♀) 13.3 mm.; width 7.0 mm. Brazil.....*auriculata n. sp.

The species described as from Chiapas and Orizaba, Mexico, under the name *detecta*, by Mr. Bates, differs from any of those above defined in its larger size and by the smooth or non-strigilate joints of the anterior male tarsi.

One of the most conspicuous features of this most interesting group of species, is the remarkably varied and radical sexual peculiarities apparent in nearly all parts of the body, including the sculpture and the sparse setæ of the upper surface and sculpture and pubescence of the pygidium, besides the usual sexual modifications of the anterior tarsi and abdominal apex in the male, and of the sides of the elytra in the female. Taking it altogether, it is probably the most highly specialized and sexually differentiated group of the entire tribe.

Ochrosidia n. gen.

The body in this genus is of moderate or small size, oblong-oval or narrower and elongate form and convex surface, and is more or less pallid in coloration throughout. The ligular part of the mentum is rather constricted and is truncate at tip, or more or less obtusely bilobed on a lower plane than the apparent tip. The clypeus is

more or less strongly reflexed at apex, having an approximately trapezoidal form and is always strongly sculptured, with distinct and strongly, medially sinuate suture; the elytra offer scarcely any suggestion of the singular female modifications occurring in the preceding genus. The material in my collection indicates two subgeneric groups as follows:

Antennal club curved and very much longer in the male than in the female; elytra always completely immaculate. Colder sonoran regions.....Group I

Antennal club oval, small in size in both sexes; elytra generally maculate. Neotropical regions.....Group II

The tarsi are slender and filiform but differ greatly in length, not only in the sexes but in different sections, especially of the first group.

Group I.

Subgenus **Ochrosidia** in sp.

This is a large group of species, including glabrous and a few sparsely pubescent forms. The color is very monotonously pale brownish-flavate, with the head black or darker as a rule; they occur in abundance throughout the nearctic and Sonoran regions and, in fact, are the only members of the great tribe Cyclocephalini inhabiting the Atlantic regions of North America; they are divisible into two well marked sections of almost subgeneric weight as follows:

Body stout in form; pronotum never margined at base; hind tarsi longer, always longer than the tibiæ even in the female; larger claw of the anterior male tarsi long, only moderately arcuate, very unequally cleft at tip, the outer ramus extremely slender and not extending quite to the tip of the claw.....Section A

Body more slender in form, elongate-oval; pronotum always margined at base though incompletely as a rule; hind tarsi shorter in both sexes and, in the female, very much shorter than the tibiæ, sometimes not as long as the tibiæ in either sex; larger claw of the anterior male tarsi very short, stout and strongly arcuate, the outer ramus extremely small, fine and at a long distance from the apex of the claw, frequently broken away, leaving no apparent modification of the upper edge.....Section B

The first section includes all species of the well known *immaculata* type, while the second is represented by *longula* Lec., and a few allied forms, all confined to the Sonoran fauna, excepting *marcida*, from Austin, Texas, and possibly *seditiosa* Lec., from the Mississippi coast, which probably represent its extreme eastern range.

Section A.

The species of this division are moderately numerous and are distributed from the Atlantic coast to southern California and northern Mexico; they are resolvable into two remarkably differentiated groups, as shown by the table given below. The pronotum is, like the elytra, almost uniformly immaculate, but in *villosa* there is occasionally a complex nubilate design, which is completely analogous to the faint intricate design seen on the pronotum of *fulgurata*, belonging to the second group of the genus, indicating that, in spite of the marked differences in the antennæ as modified by sex, there is really but a single genus. Our species may be recognized quite readily as follows:

Male and female very different in general habitus, the female shorter, stouter, generally darker in color, smaller in size, with thicker integuments and stronger sculpture than the male and always having a feeble medial dilatation of the lateral edges of the elytra; pygidium with erect pubescence in the male, glabrous in the female.....2

Male and female similar in form, the latter generally somewhat darker in coloration and of larger size as a rule but without marginal modification of the elytra, the pygidium glabrous in the male or virtually so; species Sonoran, so far as known; individuals of both sexes varying greatly in size of body, as in the preceding division.....8

2—Elytra glabrous in both sexes, the female without long hairs along the lateral edges.....3

Elytra sparsely pubescent, the pubescence very conspicuous (♂) but almost wanting (♀); female elytra with long bristling hairs along the sides.....7

3—Body (♂) subcylindric, perfectly parallel, the prothorax fully as wide as the elytra, convex, shining, pale rufous, the head black basally and the elytra pale brownish-flavate; head sparsely punctate, rather more than half as wide as the prothorax; clypeus transverse, semicircular, with the sides anteriorly broadly oblique and straighter, all the edges strongly reflexed; surface strongly but not densely punctate, the suture obsolescent medially; antennal club much longer than the stem; prothorax two-thirds wider than long, the feebly arcuate sides converging anteriorly, the basal angles rounded, the apical sharp but rather short; basal bead wholly wanting, the apical entire; punctures strong, sparse, a little closer laterally; scutellum with scattered strong punctures, the edges abruptly and broadly smooth; elytra a fourth or more longer than wide, the parallel sides very feebly sinuate before the middle, the apex rapidly circularly rounded; punctures variable, rather coarse to fine, always finer posteriorly, the three geminate series usually evident; pygidium shining, convex, finely, very sparsely punctate, the hairs rather short and very sparse; hind tarsi two-thirds longer than the tibiæ; claw-joint of the anterior tarsi about as long as the three preceding.

Female smaller, stouter, darker in color, inflated posteriorly; head much smaller, the eyes not so large, the clypeus shorter; prothorax shorter and more strongly punctate, three-fourths wider than long; elytra shorter, but little longer than wide, behind the middle much wider than the prothorax, with the edge broadly arcuate and slightly thickened; punctures much coarser, the geminate series more distinct; pygidium finely, sparsely punctate, glabrous; hind tarsi much shorter, scarcely longer than the tibiæ; antennal club three-fifths as long as in the male. Length (♂♀) 11.0–12.3 mm.; width 5.9–6.4 mm. Florida. Four examples. . . . . **parallela** n. sp.

Body oblong-oval in form, the prothorax always somewhat narrower than the elytra in both sexes. 4

4—Prothorax less transverse, three-fifths to two-thirds wider than long in both sexes. Body (♂) elongate-oval, convex, shining, rather dark and piceo-flavate in color, moderately shining; head black, half as wide as the prothorax to somewhat more, not coarsely but strongly, rather loosely punctate, finely and sparsely toward base; eyes separated by distinctly more than twice their width; clypeus rufous, not quite twice as wide as long, trapezoidal, the sides nearly straight; angles obtuse but not very broadly rounded, the apex feebly arcuate, moderately reflexed, the surface irregularly, shallowly and not very densely punctate; antennal club slender, nearly one-half longer than the stem; prothorax with the sides feebly, subevenly converging and broadly arcuate from the rounded basal angles to the apex; punctures rather strong but sparse, somewhat less sparse laterally; scutellum sharply ogival, punctured toward base and with a more or less evident groove parallel to the margins; elytra nearly a fourth longer than wide, distinctly wider than the prothorax, feebly swollen posteriorly, circularly rounded at apex, rather strongly but loosely punctate, the three geminate series more or less evident and feebly costulate; pygidium convex, rather strongly, loosely punctate and with moderate erect pubescence. Female shorter, more oblong-oval, pale red-brown, the head smaller, more finely punctate, with a smooth median line, the eyes not quite so large, the clypeus almost exactly as in the male; prothorax almost as long but broader and with more arcuate sides; elytra almost similarly but more coarsely sculptured, the edges at the middle distinctly dilated, rounded and very much thickened. Length (6 ♂, 1 ♀) 9.5–13.5 mm.; width 5.5–6.8 mm. Alabama (Huntsville and Mobile) and Louisiana (Morgan City and Vowell's Mill). . . . . **protenta** n. sp.

Prothorax shorter, more parallel basally, the body more oblong-oval in form. 5

5—Prothorax only about three-fourths wider than long, head large, rather evidently more than half as wide as the prothorax. Body larger than in any other of this section, oblong, rather convex and shining, pale yellow-brown; head black, the clypeus rufous, sculptured nearly as in the preceding, the eyes larger and more prominent, separated by twice their own width to a little more; clypeus almost semicircular, the angles at the sides of the feebly reflexed and rounded apex barely observable; suture effaced medially; antennal club barely at all

longer than the stem, which is longer than in *protenta;* prothorax large, a little narrower than the elytra, narrowed anteriorly, the basal angles broadly rounded; base immarginate as usual, feebly, truncately lobed medially, rather strongly, sparsely punctate, less sparsely laterad; scutellum with a few punctures, pale, the edges dark; elytra about a fifth longer than wide, broadly circularly rounded at tip, the punctures not coarse but well impressed, rather sparse, the three geminate series evident, the outer often scarcely traceable; pygidium convex, rather strongly and closely impresso-punctate, the erect hairs moderate. Female smaller and shorter than the male, the head smaller, the clypeus trapezoidal, with straighter sides, the eyes smaller; prothorax nearly similar but with more rounded sides, which are more convergent anteriorly; elytra with coarser but not denser sculpture, the geminate grooves coarser and deeper; sides at the middle prominently arcuate and narrowly deplanate; pygidium glabrous, finely and sparsely punctate medially, finely, feebly scabrous laterad and basally; metasternum more coarsely punctate but much less pubescent. Length (♂) 12.0–15.0, (♀) 11.8 mm.; width (♂) 6.5–7.5, (♀) 7.0 mm. Missouri, Kansas, Oklahoma and Texas. Eight males and one female.

rufifrons n. sp.

Prothorax shorter, but little less than twice as wide as long, the head and eyes less developed 6

6—Form (♂) oblong-oval, convex, rather shining, only moderately stout, the color pale yellow-brown, with the head black and the clypeus obscure rufous; head half as wide as the prothorax to slightly less, rather finely but deeply, sparsely punctate, the eyes separated by obviously more than twice their width though prominent; clypeus trapezoidal with arcuate sides and apex, the latter moderately reflexed, the obtuse angles rounded, the surface closely but shallowly punctate, the suture obsolescent; antennal club distinctly longer than the stem, curved as usual; prothorax with the sides broadly arcuate and feebly converging from the rounded basal angles to the apex; punctures sparse, rather fine, more distinct laterad; scutellum very acutely ogival, with a few small punctures; elytra a fifth longer than wide, the punctures rather strongly impressed, well separated, confused, lineate laterally, the three geminate series and feeble costules evident; pygidium convex, sparsely punctate, and rather closely subscabrous, the erect hairs only moderate in length and not dense. Female shorter and stouter than the male and darker red-brown in color, the head notably small, two-fifths as wide as the prothorax, the eyes still more separated, the clypeus nearly similar; antennal club very much shorter and not as long as the shorter stem; prothorax more rounded at the sides, the sparse punctures rather stronger; elytra rather more strongly but similarly and not closely punctate, the feebly convex costæ of the geminate series more conspicuous; lateral edges at the middle prominently though broadly rounded and very distinctly explanate; pygidium glabrous, shining, less convex, the sculpture

nearly as in the preceding species. Length (21 ♂, 5 ♀) 9.5–12.5 mm.; width 4.7–6.7 mm. Virginia and North Carolina and westward to Missouri, Kansas and Mississippi (Vicksburg). [*Melolontha immaculata* Oliv., *Mel. nigrifrons* Panz., and *Cyclocephala frontalis* Sturm]..... **immaculata** Oliv.

Form (♂) somewhat similar but much stouter, relatively shorter and with still thinner pellucid pale brownish-yellow integuments; head rather less than half as wide as the prothorax, piceous-black, with the deep punctures rather close-set at each side of the front, sparse elsewhere and smaller basally; eyes large, prominent, separated by twice their width; clypeus trapezoidal, with strongly arcuate sides and apex, so that the angles are subobliterated, the apex strongly reflexed; surface closely punctured and subrugose; suture obliterated medially but easily traced by the abrupt difference in sculpture; antennal club as long as the stem or a little longer; prothorax not quite as transverse as in the preceding, the rounded sides becoming more parallel posteriorly, the basal angles less broadly rounded, the punctures similar; scutellum very acute, with a few feeble scattered punctures; elytra but slightly elongate, the rather sparse punctures finer, the geminate series evident, the intermediate surfaces perfectly flat; pygidium more sparsely and clearly punctate, the erect hairs moderate; hind tarsi long as usual. Female smaller, shorter, with denser and browner integuments: head small, the clypeus nearly similar but shorter, the dense punctures deeper; antennal club but little more than half as long; prothorax about twice as wide as long, the sides more rounded, the sparse punctures sometimes fine and occasionally rather coarse; scutellum more punctured; elytra more inflated posteriorly and with the punctures closer and relatively coarser than in any other form of the genus, sometimes rugulose, the costæ more evident; lateral edges at the middle only slightly arcuate and scarcely at all deplanate or thickened; pygidium glabrous; hind tarsi very short as usual in the females of this section, a little longer than the tibiæ. Length (♂) 11.2–12.0, (♀) 11.3–11.6 mm.; width (♂) 6.2–6.8, (♀) 6.0–6.6 mm. Kansas (Douglas Co.). Two males—the types; the two females are unlabeled and may not really belong to the species..... **tenuicutis** n. sp.

7—Form (♂) oblong, parallel, moderately convex, shining, generally much darker red-brown than in any of the preceding species, the erect elytral pubescence sparse and easily removed, longer, closer and bristling along the sides; head about half as wide as the prothorax, black, with rather close-set punctures, sparser along the sometimes feebly convex median line, remote basally, the eyes only moderately large, separated by much more than twice their width; clypeus trapezoidal, with rounded sides and rounded reflexed apex, the angles indistinct; surface closely but not coarsely, shallowly punctate and subrugulose, the suture obsolescent except laterally; antennal club curved, much longer than the stem; prothorax almost twice as wide as long, sometimes with intricate nebulous design, in which two narrow median vittæ, more separated anteriorly, and some lateral spots, can be discerned, the sides rounded, more converging an-

teriorly; base broadly and rather distinctly lobed medially, the lobe sometimes faintly sinuate medially; punctures rather strong but well separated; scutellum punctured basally, often with an eroded line parallel to the margins; elytra a fourth to nearly a third longer than wide, very obtusely rounded at apex, barely visibly wider than the prothorax, the punctures strongly impressed and widely separated, uneven, the surface rather rugose suturad, the costæ feeble and only in part well defined and bearing rather more of the setigerous punctures than the intervals; pygidium convex, not strongly sculptured, having numerous long erect hairs; hind tarsi long, about one-half longer than the tibiæ. Female very much shorter and relatively stouter, similarly castaneous-red in color, the head very much smaller, the clypeus more rectilinearly trapezoidal, the antennal club scarcely half as long as it is in the male; prothorax more rounded at the sides, less lobed at base, strongly punctured, the lateral margin similarly extremely fine; scutellum punctured throughout; elytra barely longer than wide, the lateral edges at the middle subprominently rounded and narrowly but distinctly explanate, the margin very thin, not at all thickened; sculpture coarser and closer, with more prominent costæ than in the male, the erect hairs extremely sparse, shorter and scarcely noticeable, the pygidium shining, glabrous; hind tarsi very small, slender, barely longer than the tibiæ. Length (20 ♂, 1 ♀) 10.8–13.5 mm.; width 5.6–6.8 mm.; the female is 10.7 by 6.5 mm. in dimensions. New York (Staten Island) and Pennsylvania to Alabama. The female is rarely taken. [*Cyclocephala villosa* Burm.] ..... **villosa** Burm.

Form narrower and much smaller in size, elongate, testaceous, with erect hairs; head sparsely and finely punctate; clypeus short, broadly parabolic, the margin strongly reflexed; prothorax sparsely punctate, somewhat narrowed anteriorly; elytra punctured in series, with other smaller punctures intermingled. Length 8.7–10 mm. Georgia. [*Cyclocephala puberula* Lec.] ..... **puberula** Lec.

Form (♀) narrower than in the same sex of *villosa*, yellow-brown in color; head about two-fifths as wide as the prothorax, rufous, piceous basally toward the sides as in the preceding, but with the sides of the clypeus less converging from base to apex and more arcuate; antennal club almost as long as the stem; prothorax rather less abbreviated, two-thirds wider than long, the sides strongly, evenly arcuate, a little more converging anteriorly, the base broadly, feebly lobed medially, the punctures similar; scutellum more narrowly and very acutely triangular; elytra as in the female of *villosa* but narrower and more elongate, almost similarly but even a little more coarsely sculptured, the costæ distinct and convex, smooth; lateral margins bristling with similar setæ but with the arcuation at the middle extremely feeble and barely half as widely explanate as in *villosa;* hairs of the general surface extremely short, few in number and only visible apically; pygidium similar, shining, glabrous; sterna moderately pubescent, punctate; last ventral segment longer and less broadly rounded than in *villosa;* hind tarsi slender and very short,

but little longer than the tibiæ. Length (♀) 10.8 mm.; width 5.9 mm. Iowa (Keokuk). A single example.....**pagana** n. sp.

8—Tibiæ rather stout. Body oblong-oval, moderately convex, shining, pale castaneo-rufous in color; head (♂) half as wide as the prothorax to somewhat less, dark rufous, gradually black and finely, sparsely punctate basally, more closely frontally; eyes separated by barely more than twice their width; clypeus less than twice as wide as long, trapezoidal, with rounded and feebly reflexed sides and arcuate, more reflexed apex, the angles broadly rounded; surface densely punctate, more convex medially as a rule, the suture feeble, inconstant; antennal club a little longer than the stem; prothorax fully three-fourths wider than long, the sides broadly rounded, converging at apex; punctures sparse but distinct; scutellum sharply triangular, sparsely punctulate, fully as wide as long; elytra slightly elongate, somewhat inflated posteriorly, obtusely rounded at tip and distinctly wider than the prothorax, the punctures not coarse, rather sparse, the geminate series evident; pygidium rather finely, closely punctato-rugulose throughout, having basally a few short sparse hairs; hind tarsi two-thirds longer than the tibiæ. Female a little larger and slightly stouter than the male but otherwise nearly similar, except that the head, eyes and antennal club are much smaller, the elytra perhaps a little more coarsely punctate, the pygidium glabrous and finely, sparsely punctate; hind tarsi about as long as the tibiæ. Length (6 ♂, 2 ♀) 11.4–14.2 mm.; width 5.9–7.4 mm. Southern California.....**pasadenæ** n. sp.

Tibiæ all notably slender as in *immaculata*, which the general habitus imitates rather closely.....9

9—Head (♂) much more than half as wide as the prothorax. Body pale brownish-yellow, the head black, sparsely punctate, the front densely; eyes large, separated by rather less than twice their width; clypeus rufous, much less than twice as wide as long, almost evenly parabolic, except that the reflexed apex is rather feebly arcuate, the surface densely punctate, the suture fine but very distinctly defined throughout the width, deeply but broadly sinuate medially; antennal club a third longer than the stem; prothorax three-fourths wider than long, the sides rounded, less so and converging from rather behind the middle to the apex; punctures fine but distinct and sparse medially, strong and closer laterad; scutellum rather small, sparsely punctate; elytra distinctly longer than wide, circularly rounding in about apical two-fifths, slightly wider than the prothorax, the punctures very shallow and feebly impressed; humeral umbo strong and elongate; side margins finely punctate and with erect stiff hairs; pygidium with some very short hairs basally; hind tarsi not so long as usual, scarcely one-half longer than the tibiæ in the male. Length (2 ♂) 10.0–10.5 mm.; width 5.2–5.5 mm. Southern Arizona.
validiceps n. sp.

Head (♂) about half as wide as the prothorax, distinctly smaller in the female as usual.....10

10—Body (♂) stout in form, oblong-oval, rather convex, moderately shining, pale yellowish-brown in color, the head infuscate basally,

rather closely punctured anteriorly, sparsely basally, with a large transverse occipital area wholly devoid of sculpture; eyes large and very convex, separated by a little less than twice their width; clypeus rufous, more transverse than in the preceding but of the same general form and sculpture, the suture generally distinct throughout and broadly sinuate medially, but sometimes transverse and scarcely at all sinuate; antennal club long and curved as usual; prothorax almost twice as wide as long, of the usual form, the punctures laterad notably strong and rather close-set; scutellum very acute at apex, strongly punctate, with smooth margins; elytra a third or fourth longer than wide, the punctures rather small, moderately impressed, with evident geminate series but very variable in strength, sometimes conspicuous, occasionally almost obsolete; marginal bead finely punctate and with short erect stiff hairs; pygidium almost bald; hind tarsi long, nearly two-thirds longer than the tibiæ. Female nearly like the male but with the elytra rather more deeply and distinctly sculptured and the sides a little more arcuate, the punctures along the marginal bead smaller, more widely spaced and with still smaller erect hairs; hind tarsi slightly longer than the tibiæ. Length (14 ♂, 6 ♀) 11.0–13.2 mm.; width 6.0–7.0 mm. Southern Arizona (in the Sta. Rita and Huachuca Mts., Douglas and at other places) . . . . . **arizonica** n. sp.

Body (♂) more or less stout in form, smaller, oblong-oval, rather shining, pale brownish-flavate in color, immaculate and glabrous; head infuscate, rather closely punctate anteriorly, remotely and finely basally, with a transverse impunctate occipital area; eyes moderate, separated by much more than twice their width; clypeus trapezoidal, with rounded sides, angles and apex, the edges moderately reflexed; surface densely punctate, generally somewhat impressed anterolaterad, the suture usually complete and feebly sinuate; antennæ as usual; prothorax four-fifths wider than long, of the usual form and sparse, laterally more evident, punctuation; scutellum pointed, sparsely punctate, with smooth borders; elytra short, a fourth or fifth longer than wide, but slightly wider than the prothorax, broadly and obtusely rounded at tip, the sculpture of the usual order, the punctures rather small, feeble and well separated as a rule; pygidium with a few very short erect hairs basally; hind tarsi rather less than one-half longer than the tibiæ. Female somewhat more elongate than the male, the other differences as usual, the clypeus shorter and more transverse, the hind tarsi a little longer than the tibiæ. Length (17 ♂, 12 ♀) 9.0–12.7 mm.; width 4.5–6.7 mm. (Valley of the Rio Grande, from Jemez Springs and Albuquerque, New Mexico, to the great bend, Texas,—Wenzel) . . . . . **melina** n. sp.

A—Throughout nearly as in *melina* but narrower and more elongate in form, with stronger and coarser elytral punctures and shorter clypeus, the latter more evenly semi-elliptical, with shallow and less dense rugulose sculpture, the suture evident, feebly sinuate; prothorax about twice as wide as long and differing in being fully as wide as the elytra; hind tarsi longer, the second joint almost half

as long as the tibiæ. Length (♂) 10.5 mm.; width 5.1 mm. Texas (El Paso),—Dunn. A single example. . . . . **pusilla** n. subsp.

Body much more elongate, oval, darker in color and larger, more shining, the male distinctly more slender than the female, paler in color and of a more flavate brown; head nearly as in *melina*, the clypeus not quite so long and the suture more deeply sinuate medially; prothorax also nearly as in that species, except that it is more nearly equal in width to the elytra, the latter more elongate, a third longer than wide, evenly and less obtusely rounded behind, almost similarly sculptured; pygidium, as usual, with a few moderate hairs basally. Female much larger, pale castaneous in color, shining, the head only a little smaller and almost half as wide as the prothorax, closely and rather coarsely punctate, the clypeus almost similar in form, the suture less sinuate, sometimes obliterated medially; antennal club straight, very slender, a little shorter than the stem; prothorax less transverse, more rounded at the sides and more finely, sparsely punctate; elytra fully a third longer than wide, in outline almost as in the male but more obtusely rounded at apex, the sculpture coarser and deeper but sparse, the interspaces very smooth and shining, the costæ convex and distinct; pygidium more transverse, less convex, more angulate at tip and having a few extremely short and stiff, widely scattered hairs basally; hind tarsi barely evidently longer than the tibiæ. Length (1 ♂, 5 ♀, the type being a female) 12.0–14.0 mm. width 5.8–6.8 mm. New Mexico (Jemez Springs and Albuquerque). **facilis** n. sp.

Body rather narrowly elongate-oval, small in size, convex, not very shining, pale brownish-flavate in color; head (♂) very slightly more than half as wide as the prothorax, the eyes convex, prominent, separated by but little more than twice their own width; punctures deep, rather strong, moderately close anteriorly, sparse and smaller basally; clypeus only one-half wider than long, parabolic, with subtruncate and arcuate apex, the margins all slightly reflexed, the apex slightly more, the surface shallowly punctato-rugulose, the suture fine but evident throughout, strongly sinuate at the middle; antennæ as usual; prothorax four-fifths wider than long, of the usual form, the punctures fine, sparse, but little larger or less sparse laterad; scutellum pointed, somewhat longer than wide, sparsely and obscurely punctate; elytra long, fully two-fifths longer than wide, somewhat wider than the prothorax, unusually rounded behind from near the middle, the punctures rather small, shallowly impressed and unusually obscure; pygidium with a few short hairs basally; hind tarsi less than one-half longer than the tibiæ. Female shorter than the male, the head much smaller, the clypeus notably shorter and the suture less sinuate; eyes much smaller and less prominent; antennal club scarcely more than half as long; prothorax more nearly twice as wide as long, the punctures laterally coarser; elytra nearly similar in general outline and sculpture and also in the peculiarly dull lustre, but much shorter, only a fourth longer than wide, more distinctly wider than the prothorax; pygidium smoother, more shining and apparently glabrous; hind tarsi very slender, equal

in length to the tibiæ. Length (10 ♂, 1 ♀) 9.6–11.5 mm.; width 4.7–5.8 mm. Arizona (Sta. Rita Mts.),—Wickham. . **ovulata** n. sp.

The species of this section form a difficult study. The female is frequently very rare in collections and probably has more secluded habits than the male; this is particularly noticeable in the *immaculata* section, but is also evident throughout. The restricted geographic habitat of most of the species can be inferred from the localities given above; *immaculata* is widely distributed, however, but the pubescent species, excepting *pagana*, seem to be restricted to the regions east of the Appalachian system. I have not seen *puberula* Lec., and simply quote the very inadequate original description.

That the males of the *immaculata* and *arizonica* groups of this section of *Ochrosidia*, should so resemble each other as to be invariably confounded and mingled together indiscriminately in probably every known collection, and yet have their females so radically different in facies, is an unexplainable fact, which however is doubtless the result of different life habits. Mr. Bates, in describing *coahuilæ*, had before him a species of the *immaculata* type, and in comparing it with known forms, mistook the *arizonica* type, having similar males and females, for the true *immaculata*, having the sexes dissimilar.

Section B.

The general color scheme and structure of the antennæ in both sexes in this section resemble completely the corresponding features of the preceding section, thus precluding any suggestion of subgeneric difference, although the slender form of the body, quadrate and apically much reflexed clypeus, very different anterior tarsal claws of the male, margination of the pronotal base and very short tarsi in both sexes, would otherwise indicate such a subgeneric status. The side margins of the prothorax and elytra bristle with erect setæ throughout. The species are moderately numerous but have as yet, as in the case of Section A, never been studied and are therefore almost wholly undescribed; they are, so far as known, as follows:

Elytra abruptly much wider than the prothorax. Body above the average in size, elongate, strongly convex, smooth and rather shining, castaneous, the elytra slightly more yellow; head (♂) convex, more

than half as wide as the prothorax, confluently and rather coarsely punctate anteriorly, discretely and rather sparsely toward base, the eyes very moderate, separated by nearly three times their width; clypeus one-half wider than long, feebly trapezoidal, the sides parallel basally, feebly sinuate anteriorly, the apex arcuato-truncate, broadly, gradually and strongly reflexed, the surface coarsely and confluently punctate throughout, the suture entire, evident, broadly sinuate; antennal club arcuate, much longer than the stem; last palpal joint rather slender; prothorax two-thirds wider than long, the sides parallel, feebly and evenly arcuate from base to apical third, there becoming arcuate and converging; basal angles moderately rounded, the apical short, not sharp; basal bead interrupted at the middle, the lateral extremely fine; surface broadly convex, finely but distinctly, sparsely punctate, barely at all more coarsely laterad; scutellum rather small, not very acute, ogival; elytra nearly one-half longer than wide, subcylindric, obtusely rounded at apex, fully a fourth wider than the prothorax, the punctures fine and sparse, partially in unimpressed series; pygidium transverse, convex, finely scabrous, having sparse pubescence basally; hind tarsi rather thick, not evidently longer than the tibiæ; sterna closely pubescent. Female slightly larger and stouter than the male, otherwise nearly similar, except that the head is scarcely half as wide as the prothorax, the eyes a little smaller and the antennal club small, not quite half as long as in the male; pygidium less transverse, smaller and less convex, smoother, sparsely and feebly rugulose, sparsely pubescent basally. Length (♂ ♀) 13.0–14.3 mm.; width 5.9–6.4 mm. California.....**abrupta** n. sp.

Elytra at base not abruptly wider than the prothorax.....2

2—Last joint of the maxillary palpi stout, the scar-like marking on its upper surface broadly oval, flat and opaquely scabriculate. Body (♂) elongate-oval, very convex, smooth, pale brownish-flavate throughout, the elytra still more flavate; head slightly more than half as wide as the prothorax, convex, black, the punctures strong but separated, larger, shallower and confluent anteriorly; clypeus as in the preceding but only two-fifths wider than long, the apex extremely reflexed; surface coarsely, transversely rugose, becoming smooth in the deeply concave apical part, the median line canaliculate; suture fine, feebly defined, sinuate at the middle; eyes separated by three times their width; antennal club strongly curved, very much longer than the stem; prothorax two-thirds wider than long, the sides rounded, feebly, then more strongly, converging anteriorly, the basal angles very broadly, gradually rounded into the sides, obliterated; basal bead distinct and entire, not at all interrupted; punctures fine, sparse, becoming rather coarse and close-set laterad; scutellum ogival, finely, sparsely punctate; elytra oval, not quite one-half longer than wide, at the middle distinctly wider than the prothorax, circularly rounded in apical two-fifths; punctures fine, feebly impressed, more distinct and lineate laterad, lineate everywhere except near the suture, the series unimpressed; pygidium not very transverse, strongly convex, scabriculate, the sparse hairs

basally extremely small; hind tarsi slightly longer than the tibiæ; transverse abdominal series of punctures irregular and rather confused. Length (♂) 11.4 mm.; width 5.2 mm. Oregon (Corvallis),—Moznette.....**reflexa** n. sp.

Last joint of the maxillary palpi slender, with a narrow impressed fossa on its upper surface.....3

3—Small species, never much exceeding 10 mm. in average length...4

Larger species, much exceeding 10 mm. in average length of body....8

4—Basal bead of the pronotum entire, though sometimes becoming very feeble medially.....5

Basal bead broadly obliterated medially.....6

5—Form oblong-oval, only moderately convex, smooth, the elytra unusually short; color pale brownish-yellow. Head (♂) not visibly more than half as wide as the prothorax, discretely and moderately punctate, with a subimpunctate medial occipital area, densely and coarsely rugose anteriorly behind the suture; eyes separated by two and one-half times their width; clypeus two-fifths wider than long, feebly trapezoidal, with almost evenly arcuate sides, arcuato-truncate apex and moderately rounded angles, strongly, transversely rugose, the rugæ gradually lost anteriorly, feebly impressed along the middle: sides moderately, the apex more strongly, reflexed; suture coarse at the sides, fine, entire and sinuate medially; antennal club strongly curved, only a little longer than the stem, rather wide; prothorax relatively small, nearly twice as wide as long, the sides parallel and barely arcuate to beyond the middle, there gradually rounded and convergent to the short but sharp angles, the basal angles moderately broadly rounded; punctures fine, sparse, strong and rather close laterad, also closer along the entire basal bead throughout; scutellum as long as wide, ogival, punctured except apically; elytra barely a third longer than wide, more than a third wider than the prothorax, oblong, with parallel arcuate sides and obtusely rounded apex; punctures fine, feeble, lineate, confused and mingled with minute punctules suturally; sternal pubescence rather sparse and inconspicuous; transverse series of the abdomen even; hind tarsi very slender, not quite as long as the tibiæ. Female a little larger, with slightly more elongate hind body, the slender filiform hind tarsi barely three-fourths as long as the tibiæ. Length (♂♀) 9.7–12.0 mm.; width 4.7–5.8 mm. Southern California,—Dunn. Four examples.....**phasma** n. sp.

Form more elongate-oval, strongly convex, smooth, similar in coloration. Head (♂) almost three-fifths as wide as the prothorax, blackish, rufescent anteriorly, finely, sparsely punctate, becoming coarsely rugose behind the suture; eyes as in *phasma;* clypeus one-half wider than long, the sides subparallel, feebly oblique anteriorly, the angles rounded, the apex truncate, broadly and strongly reflexed, the sides basally not reflexed but with the fine bead elevated, the surface rufous, shining, nearly smooth, becoming gradually though moderately rugose basally; antennal club much curved, distinctly longer than the stem; prothorax about twice as wide as long, the sides moderately, subevenly rounded, more converging apically, the

basal angles moderately rounded; base arcuate, the bead gradually very feeble medially; punctures extremely fine and sparse, distinct but not coarse near the sides, not closer along the base; elytra fully one-half longer than wide, a little wider than the prothorax, the sides feebly arcuate; apex circularly rounded; punctures small, not very deep, sparse, rather confused basally, elsewhere lineate, except toward the suture; pygidium moderately convex, finely scabriculate, sparsely pubescent basally; hind tarsi not quite as long as the tibiæ. Female with the head and prothorax relatively much smaller than in the male, the eyes smaller, the clypeus more coarsely rugose almost throughout; antennal club small, less than half as long as in the male; elytra a little shorter, finely, remotely punctulate, the punctures not so confused basally, in unimpressed series except suturally, the sutural series regular as usual; pygidium smoother, more shining, glabrous; hind tarsi very small, slender, only three-fourths as long as the tibiæ. Length (♂♀) 9.8–10.5 mm.; width 4.7–5.0 mm. Arizona (Huachuca Mts.),—H. W. Wenzel. . . . . **modulata** n. sp.

6—Front densely and strongly rugose behind the clypeal suture; clypeus with the sides not at all reflexed in basal two-thirds, the surface continuing unmodified to the extreme edges, concave and strongly reflexed only at apex. Body subparallel, rather strongly convex and shining, pale brownish-yellow, the head black, the front rufescent and the clypeus rufous, the punctures becoming fine and sparse basally; eyes separated by a little more than twice their widths, the clypeus coarsely and unusually deeply, confluently punctate, of the usual subquadrate form, the strongly upturned apex smooth in the concavity, the median line feebly impressed; antennal club but little longer than the stem, slightly curved; prothorax three-fourths wider than long, the sides broadly rounded and slightly converging anteriorly from the broadly rounded basal angles to the apex, finely, sparsely punctate, more distinctly and less sparsely laterad; basal bead fine, only visible toward the sides; scutellum acutely ogival, finely, sparsely punctate; elytra nearly two-fifths longer than wide, parallel, with feebly arcuate sides, circularly rounded at apex, barely at all wider than the prothorax, the punctures fine, sparse and feebly impressed, in series except suturad; abdomen with the punctures of the transverse series notably fine. Length (♂) 10.8 mm.; width 5.1 mm. Arizona (Tuçson),—Wickham. . . . . **rugulifrons** n. sp.

Front not strongly or densely rugose behind the suture; clypeus concave along the sides. 7

7—Form oval, convex, not very shining, the elytra dullish; color as in the preceding; head (♀) nearly three-fifths as wide as the prothorax, sparsely punctate, finely posteriorly, coarsely but shallowly and discretely anteriad; clypeus one-half wider than long, feebly trapezoidal, with rounded sides and truncate apex, the surface deeply concave, smooth and alutaceous throughout the external periphery to the extreme base, the medio-basal parts convex, rather coarsely but not deeply, densely punctate and feebly impressed along the middle suture rather fine but unusually deep and strong throughout the

width, broadly, feebly sinuate medially, deeply sinuate at the sides; prothorax about twice as wide as long, in form nearly as in the preceding and similarly punctured; basal bead rather thick, wholly obliterated medially; scutellum small, slightly wider than long, ogival, with very arcuate sides, finely, feebly, sparsely punctate; elytra oval, two-fifths longer than wide, fully a third wider than the prothorax, the sides arcuate; punctures rather large, impressed, confused suturad but in rather regular and moderately impressed series elsewhere; punctures of the regular abdominal series not very small; hind tarsi small, not three-fourths as long as the tibiæ, Length (♀) 9.7 mm.; width 4.8 mm. Arizona. A single example, without further indication of locality.....**ambiens** n. sp.

Form elongate, rather slender and parallel, moderately convex, slightly shining, pale brownish-flavate, the prothorax slightly more rufous; head (♂) fully three-fifths as wide as the prothorax, black, including the basal part of the clypeus; punctures fine, sparse, large, confused but very shallow behind the suture; eyes separated by but little more than twice their width; clypeus two-fifths wider than long, feebly trapezoidal, with feebly bisinuate sides, feebly arcuate apex with rather broadly rounded angles, nearly smooth and very gradually strongly reflexed anteriorly, the lateral concavities not extending quite to the base; medio-basal part feebly, broadly and gradually convex, shallowly rugulose in irregular transverse lines; suture strong, deep and entire, broadly sinuate medially; antennal club strongly curved, distinctly longer than the stem; prothorax four-fifths wider than long, in form nearly as in the preceding two species, the fine but distinct punctures less sparse, the fine basal bead only visible toward the sides; scutellum wider than long, acutely ogival, finely, rather sparsely punctulate; elytra almost one-half longer than wide, not distinctly wider than the prothorax, parallel, with feebly arcuate sides and broadly, unusually obtusely rounded apex; punctures small, feeble, sparse, arranged in very irregular unimpressed series, except toward the suture; pygidium convex, shining, with very close-set but distinct punctures, bald; punctures of the regular abdominal series rather strong; claw-joint of the anterior tarsi very short as usual in this section, not quite twice as long as wide; hind tarsi short, scarcely as long as the tibiæ. Length (♂) 10.3 mm.; width 4.7 mm. Texas (Austin). A single example, taken by the writer.....**marcida** n. sp.

8—Head (♂) smaller, less than half as wide as the prothorax; body stout, convex, the coloration and sculpture as in the preceding species; head rufous, infuscate basally, finely, sparsely punctate, rugose anteriorly; eyes separated by scarcely more than twice their width; clypeus rugose, two-fifths wider than long, feebly trapezoidal, the sides feebly sinuate anteriorly, the apex rather strongly reflexed, slightly arcuate, the obtuse angles moderately rounded; sides not or scarcely reflexed; median line broadly, feebly impressed; suture rather indistinct medially, deep and coarse at the sides; antennal club longer than the stem, moderately curved; prothorax but little more than one-half wider than long, the sides just visibly converging

from the moderately rounded basal angles to beyond the middle, then rounding and more converging to the short but sharp apical angles; basal bead distinct, obliterated medially; punctures fine, very sparse, becoming stronger and closer only very near the sides; scutellum ogival, sparsely punctulate; elytra less than one-half longer than wide, nearly two-fifths wider than the prothorax, the parallel sides arcuate; apex rapidly and very obtusely rounded; punctures small, sparse, feebly impressed, in irregular unimpressed series, the confused punctures of the second interval becoming narrowly aggregated along the middle except basally; pygidium scabriculate, having numerous hairs basally; hind tarsi a little longer than the tibiæ. Length (♂) 13.0 mm.; width 6.7 mm. California..**obesula** n. sp.

Head (♂) larger, generally more than half as wide as the prothorax; body more or less stout in form.....9

9—Elytral sculpture as in the preceding, the punctures fine and sparse, feebly impressed though distinct, broadly confused throughout the length of the second interval.....10

Elytral sculpture different, rugose suturally and with several feebly impressed lines, of which one near outer third for some distance behind the middle is especially noticeable; punctures everywhere so minute and sparse as to be scarcely discoverable; body larger than in any other species.....11

10—Form very stout, convex, shining, pale red-brown, the elytra more flavate; head black, the punctures rather close-set, the front rufescent and coarsely rugose; eyes separated by much more than twice their width; clypeus trapezoidal and one-half wider than long, the sides nearly straight, the apex strongly reflexed; surface coarsely, deeply punctato-rugose, the sides not reflexed but with the usual bead; median line not or scarcely impressed; suture fine but deep and very distinct, entire, broadly sinuate medially; antennal club longer than the stem; prothorax barely three-fifths wider than long, the sides parallel and nearly straight, arcuate and converging beyond the middle; basal angles unusually narrowly rounded; basal bead very feeble and flat, broadly obliterated medially; punctures minute and very remote medially, gradually more distinct though still sparse laterad; scutellum with rounded sides and very obtuse apex, very feebly, sparsely punctulate; elytra two-fifths longer than wide, two-fifths wider than the prothorax, obtusely rounded at apex, the punctures widely separated, in general serial, and, broadly toward the sides, becoming rather large, deeply impressed and conspicuous, the lustre more shining than in most of the preceding species; sternal pubescence rather long and abundant; sparse hairs of the abdomen unusually long and fine; hind tarsi about a fourth longer than the tibiæ. Length (♂) 13.2 mm.; width 6.5 mm. California (San Diego),—Ricksecker.....**oblongula** n. sp.

Form less stout, more oval, convex, rather shining, the color as in the preceding; head (♂) distinctly more than half as wide as the prothorax, strongly, closely and anteriorly coalescently punctate, more finely but rather closely basally, with a smoother spot at the middle of the vertex, deep black, this color extending onto the base of the

clypeus, which is more transverse than usual, more than one-half wider than long, trapezoidal, the sides feebly sinuate anteriorly, the apex truncate, with broadly rounded angles, strongly reflexed; surface strongly, coalescently punctured, impressed along the median line and broadly toward the sides; suture fine but distinct, strongly sinuate at the middle; antennal club strongly curved, longer than the stem; eyes separated by evidently less than twice their width; prothorax only one-half wider than long, the sides strongly rounded, more converging anteriorly, the basal angles broadly rounded; base arcuate, not margined except feebly near the sides; punctures minute and very remote, more distinct and closer laterad; elytra not quite one-half longer than wide, oval, circularly rounded in apical two-fifths, more than a fourth wider than the prothorax; surface subrugulose, finely, sparsely, sublineately punctate; pygidium convex, scabriculate, with very few extremely short hairs basally; hind tarsi not distinctly longer than the tibiæ. Female similar but with the elytra a little shorter and more broadly oval, the head and also prothorax relatively smaller, the frontal suture less sinuate, the prothorax shorter, the stronger basal bead only interrupted medially; hind tarsi tapering, thickened basally, three-fourths as long as the tibiæ. Length (♂ ♀) 11.5–12.2 mm.; width 6.0–6.3 mm. Arizona (Congress Junction),—F. H. Snow. Three examples. **prona** n. sp.

11—Body elongate-oval, strongly convex, rather shining, pale brownish-rufous; head (♂) slightly more than half as wide as the prothorax, with well separated punctures, rufous and rugose anteriorly; eyes separated by fully two and one-half times their width; clypeus one-half wider than long, the sides at first straight and feebly, then straight and more strongly, converging, to the strongly reflexed apex, the angles rounded; surface coarsely and deeply rugose basally, feebly in the concave anterior part, feebly impressed along the middle; side margins fine and elevated; suture coarse, entire, broadly, circularly sinuate medially; antennal club as in *prona;* prothorax fully three-fifths wider than long, the sides parallel and scarcely arcuate, rounding and converging in nearly apical half; base evenly arcuate, with a thick entire bead; basal angles moderately broadly rounded; punctures minute and remote, rather close and strong near the sides; scutellum obtusely ogival, with strongly rounded sides; elytra one-half longer than wide, more than a fourth wider than the prothorax, the parallel sides arcuate; apex circularly rounded in two-fifths; pygidium convex, transverse, with numerous erect hairs basally; tibiæ rather stouter than usual; hind tarsi slightly though evidently longer than the tibiæ. Length (♂) 14.4 mm.; width 6.8 mm. California (the locality not definitely recorded). One specimen.....**rustica** n. sp.

Form elongate, testaceous, shining; head sparsely punctate, nigrescent; front testaceous; clypeus parabolic, subtruncate, the apical margin strongly reflexed; prothorax sparsely punctate, somewhat narrowed

anteriorly; elytra not at all deeply, rugosely punctate. Length 9.5 mm. Lower California (Cape San Lucas). [*Cyclocephala longula* Lec.] ..... **longula** Lec.

Form elongate, testaceous, shining; head sparsely, more finely punctate, black; clypeus parabolic, truncate, the apical margin strongly reflexed; prothorax sparsely punctate, the apical margin blackish, somewhat narrowed anteriorly; elytra not at all deeply punctate. Length 10.0 mm. Mississippi (Ship Island). [*Cyclocephala seditiosa* Lec.] ..... **seditiosa** Lec.

Besides the larger species described above, such as *obesula*, *oblongula* and *prona*, I have at hand a series of eleven males and one female, which, as a whole, are more slender and slightly smaller, varying from 10 to 13 mm. in length. They were collected at various points in southern California and are typical of the form universally labeled *longula* Lec., in our collections. I have strong reason to believe, however, that they are not *longula*, and they appear to be somewhat composite, but to work out the various closely related forms would be a vast labor in itself and require large series from definite localities. The fauna of the region about Cape San Lucas differs appreciably from that of the coast regions of southern California, but tends to extend to the northward along the eastern side of the peninsula as far at least as the upper end of the gulf. I have simply translated the original descriptions of *longula* and *seditiosa* and attach them to the table, further useful taxonomy being impossible at present. *Seditiosa* would seem to belong truly to this Section B of *Ochrosidia* and, if this is so, greatly extends the geographic range of this peculiar group of species to the eastward.

Mr. Bates does not describe the male antennæ of his *Cyclocephala ovulum*, and my single example is a female. The form of the anterior tarsal claws of the male shows that it cannot be associated with *dimidiata*, as suggested by the author; its general facies is so similar to that of *Ochrosidia* that, if the antennal club of the male were in any way similarly constituted, I should not hesitate to regard it as the type of a Section C of this subgenus; at any rate, it belongs in this vicinity and, if not a section of *Ochrosidia* proper, is probably a subgenus equivalent in value to the following:

Group II.

Subgenus **Graphalia** nov.

This subgenus of *Ochrosidia* includes as typical forms *lunulata* and *fulgurata* of Burmeister and *comata* Bates, the first two of which are represented in my collection. The complex nebulous design on the pronotum is well developed in *fulgurata* but is not so evident in my male example of *lunulata*, said to be from Sta. Catharina, Brazil; it is however a very variable feature. The following species is allied to *lunulata* but is narrower and differs in the clypeus, clypeal suture, in its smaller head, in sculpture and other characters:

Form elongate-oval, strongly convex and shining, glabrous, pale brownish-flavate, the abdomen a little darker, the pygidium clouded toward the sides; head (♂) much less than half as wide as the prothorax, blackish, the punctures moderate, rather close-set but fine and sparse basally; eyes separated by barely more than twice their own width; clypeus obscure rufous, three-fifths wider than long, trapezoidal, the sides feebly arcuate, becoming rather more oblique and straight anteriorly, the apex arcuato-truncate, moderately reflexed, the angles rounded; surface confluently but very shallowly punctate, gradually smooth anteriorly, broadly impressed toward the sides, except near the base; suture broadly impressed, entire, sinuate medially; antennal club three-fourths as long as the stem; prothorax two-thirds wider than long, the sides evenly rounded and gradually converging from the broadly rounded basal to the very sharp and moderately prominent apical angles; base feebly margined near the sides; surface smooth, with a complex nubilate design, the punctures very fine, rather sparse, not closer but larger laterad, wanting around the small sublateral spot; scutellum very acutely pointed, finely, feebly, sparsely punctate; elytra scarcely a third longer than wide, not evidently wider than the prothorax, broadly parabolic in apical third; surface very shining, having two small brown spots near basal third, the inner linear and oblique, and one, minute, brown discal point behind the middle; punctures rather sparse, moderately impressed, not very fine and in great part linearly arranged; propygidium minutely, closely punctate and with close-set, very small hairs, the pygidium convex, more shining, finely scabriculate and with very short sparser hairs; claw-joint of the anterior male tarsi bent, as long as the preceding three; hind tarsi a fourth longer than the tibiæ. Length (♂) 12.5 mm.; width 6.5 mm. Honduras (San Pedro Sula) . . . . . *oblita n. sp.

This species is allied to *lunulata* Burm., but differs in its less broadly truncate, relatively less transverse clypeus, which is more impressed laterally and with medially sinuate and not virtually rectilinear suture, in not having the pronotal punctures closer

laterally, in the much more closely punctulate and pubescent propygidium and less transverse and more convex pygidium; the hind tarsi are evidently shorter. There are only two brown pronotal spots at each side of the median, anteriorly flavomaculate vitta, not counting the constant sublateral dark dot. The true home of *lunulata* is Brazil, though there are some closely allied forms in Mexico and other regions, of which *oblita* is one.

Dichromina n. gen.

There are two structural characters common to all the species of the *dimidiata* type, which constitute it one of the more distinct and specialized divisions of the great *Cyclocephala* complex, and without doubt it is therefore entitled to generic distinction. These structural features refer to the form of the larger claw of the anterior male tarsi and to the very small, indeed relatively minute, tarsi. The general habitus, due to the peculiar form and coloration of the body, is also rather distinctive though practically reproduced in the next genus, as well as in *Cyclocephala atricapilla*, which is here referred to the genus *Stigmalia*, though probably not truly belonging there; if we overlook the large head and very peculiar pygidium of *atricapilla*, it could just as well be placed in *Homochromina;* in pygidial structure of the female, it however does not accord with any known generic type. *Guttata* Bates, seems to belong to this genus, although my single example is a female, as was also the unique type described in the Biologia; besides this and a species probably from Brazil, though marked "Peru" on the label, sent to me under the name *melanocephala* Fabr., there are in my collection the four following species:

Eyes separated by twice their width or more in both sexes.....2
Eyes notably large and prominent, separated by less than twice their width in both sexes.....4

2—Pygidium (♀) shining, with well separated, shallow, irregular punctures throughout; prothorax shorter, nearly twice as wide as long. Body elongate-oval, moderately convex, shining, pale red-brown in color, the sterna sometimes black, the elytra pale brownish-flavate; head about half as wide as the prothorax, black, discretely and irregularly punctate; clypeus rufous to nearly black, two-fifths wider than long, trapezoidal, very coarsely but shallowly rugose, convex, broadly impressed along the middle, the truncate apex moderately reflexed and smooth, the obtuse angles not rounded; antennal club small, oval, barely more than twice as long as wide; clypeal suture

distinct, rather sharply sinuate at the middle; prothorax subparallel, the sides rounding and converging well before the middle; basal angles moderately rounded; base feebly lobed medially, completely immarginate; apical angles sharp and prominent; punctures fine but strong, sparse, notably coarse and rather close toward the sides; scutellum ogival, rather closely punctate, with wide smooth margins; elytra fully one-half longer than wide, more than three times as long as the prothorax and, at the middle, but little wider, circularly rounded at tip; punctures not very fine but shallow, moderately close, arranged for the greater part in rather close-set unimpressed series; hind tarsi rather more than three-fourths as long as the tibiæ. Length (♀) 11.0–11.4 mm.; width 5.4–5.7 mm. Mexico (Tepehuanes, Durango), —Wickham..... ***regularis** n. sp.

Pygidium in both sexes densely but finely scabriculate; prothorax less transverse, three-fifths to two-thirds wider than long.....3

3—Hind body elongate, always much more than one-half longer than wide. Body nearly as in the preceding but a little stouter, especially in the female, the coloration nearly similar; head more or less than half as wide as the prothorax, black, variably punctate, the eyes (♂) separated by only a little less than twice their width; clypeus usually dark rufous, trapezoidal, nearly as in the preceding but with the obtuse angles generally not at all sharply defined and usually somewhat rounded; antennal club (♂) small, three times as long as wide and much shorter than the stem, only a little smaller in the female; prothorax with the sides feebly converging to before the middle, then gradually rounded and more convergent to the apex; basal margin without trace of beading, the feeble median lobe somewhat truncate medially; punctures as in *regularis* but relatively less coarse laterad; scutellum similar but more obtuse; elytra similar but relatively distinctly broader and with the otherwise similar punctures smaller, or at least feebler and less well defined, generally denser and more confused postero-externally; hind tarsi (♂) three-fourths, or (♀) barely more than two-thirds, as long as the tibiæ. Length (♂♀) 11.8–15.0 mm.; width 5.9–7.8 mm. Mexico (Jalapa and Durango), Arizona and in the southern parts of California. Abundant and varying greatly in size. [*Cyclocephala dimidiata* Burm.]..... **dimidiata** Burm.

Hind body much more abbreviated, distinctly less than one-half longer than wide. Body colored similarly throughout; head (♂) similar but with the eyes separated by distinctly more than twice their width; clypeus similar and with the truncate apex strongly and gradually reflexed, but with the sculpture of the basal parts still coarser and shallower, confusedly rugulose; prothorax similar, but with the punctures everywhere stronger; scutellum sharply ogival, strongly, closely punctate, with the usual abrupt smooth margins; elytra medially about a third wider than the prothorax, more broadly rounded at apex, the punctures similarly disposed but much larger, deeper and conspicuous, finer and more confused postero-laterad; pygidium convex and, as usual, glabrous, finely, densely scabriculate,

but more loosely and coarsely so toward the lateral angles than in *dimidiata;* hind tarsi slender, four-fifths as long as the tibiæ; punctures of the transverse abdominal series finer and more confused. Length (♂) 11.4 mm.; width 6.0 mm. Lower California (San José del Cabo). [*Cyclocephala elegans* Horn]..... **elegans** Horn

4—Body oblong-oval, much smaller in size, rather dilated posteriorly in both sexes; coloration and lustre as in the preceding species; head (♂) a little more than half as wide as the prothorax, the punctures fine and rather sparse; eyes very large, prominent, separated by two-thirds more than their width; clypeus relatively small and short, three-fifths wider than long, exactly trapezoidal, the obtuse angles rather well defined, the oblique sides and truncate apex straight, the apex gradually and moderately reflexed; surface with coarse, shallow, gradually anteriorly obliterated rugulose sculpture; suture almost straight; antennal club evidently shorter than the stem; prothorax nearly twice as wide as long, nearly as in the preceding but more arcuate at base and with more broadly rounded angles; scutellum similar but shorter, more obtusely ogival; elytra shorter than in *dimidiata*, a third longer than wide, more obtusely rounded at tip, nearly a third wider than the prothorax; punctures rather coarse, close-set and in close unimpressed series, confused on the second and fourth intervals; pygidium closely scabriculate throughout; hind tarsi nearly as long as the tibiæ. Female larger but otherwise nearly similar, the eyes separated by very nearly twice their width; antennal club a little smaller; prothorax nearly as in the male, the elytra similar, the edges not modified; pygidium similarly densely and finely scabriculate but less convex, it being tumid near the apex in the male; hind tarsi barely three-fourths as long as the tibiæ. Length (♂ ♀) 9.2–10.5 mm.; width 4.6–5.4 mm. Panama (Chiriqui)..... ***ocularis** n. sp.

If I have identified *elegans* properly, it is undoubtedly not the same as *dimidiata*, the abbreviated hind body and more strongly punctured elytra giving it a distinctly different appearance. The pronotum in *dimidiata* is sometimes nearly as black as the head, though usually it is of a bright brownish-rufous color, always perfectly uniform throughout the surface.

Homochromina n. gen.

In this genus the clypeus has a form altogether different from that seen in any of the immediately preceding genera and is more like that of *Stigmalia*, though not having any indication of apical sinuation; it is large and nearly flat, finely sculptured and with feeble trapezoidal outline and arcuate, very moderately reflexed apex, having broadly rounded angles. The coloration and general aspect of the body is nearly as in *Dichromina*, but the tarsi are not so

abbreviated and the sculpture throughout is finer and feebler, the pygidium being almost sculptureless and highly polished. The ligular part of the mentum is moderately constricted and generally slightly concave, but the apex is broadly arcuato-truncate. The mandibles are slender, truncate and sometimes externally prominent at tip, the antennal club small in both sexes and the larger anterior claw of the male is long, stout, cleft at apex, the slender upper ramus extending as far as the lower. The three species at hand, which are all peculiar to the tropical regions of Mexico, may be known as follows:

Base of the pronotum with a distinct marginal bead, interrupted medially. Body very elongate-oval, convex, polished throughout, blackish-castaneous, the head and clypeus deep black, the elytra pale yellowish-brown, wholly immaculate; head (♂) small, two-fifths as wide as the prothorax, very finely, sparsely punctate, the surface continuously flat throughout the front and clypeus, the latter large, less than one-half wider than long, finely and very shallowly, irregularly but discretely punctulate, the sides converging very slightly from base to the broadly rounded angles and with a fine elevated bead, the apex broadly arcuate, slightly thickened and gradually very moderately reflexed; suture fine, obliterated medially; eyes moderate, the antennal club small, oval; prothorax one-half wider than long, feebly trapezoidal, the sides evenly and moderately converging from the rather broadly rounded angles to the apex and evenly, rather feebly arcuate; apical angles sharp and prominent; punctures very sparse throughout, fine medially, slightly more distinct toward the sides; scutellum flat, sharply ogival, minutely and remotely punctulate; elytra about one-half longer than wide, rounding behind about the middle, barely visibly wider than the prothorax, sparsely, very finely and feebly punctulate, the punctures for the most part in rather irregular series; pygidium very convex, polished and almost sculptureless, finely scabriculate near the side angles, glabrous, the lower margins not sinuate; punctures of the abdominal series very fine and feeble; hind tarsi missing in the type, the intermediate slightly longer than the tibiæ; claw-joint of the anterior almost as long as the others combined. Length (♂) 16.0 mm.; width 8.0 mm. Mexico (locality unknown) ..... ***divisa** n. sp.

Base of the pronotum completely immarginate 2

2—Form more broadly elongate-oval, convex, polished throughout; color of the entire body and legs dark and rich red-brown, the elytra alone pale brownish-flavate, wholly glabrous, the sternal vestiture rather sparse but evident; head (♀) scarcely two-fifths as wide as the prothorax, dark castaneous, blackish basally, minutely, sparsely punctulate, the median parts of the front sculptureless; clypeus shorter, fully two-thirds wider than long, strongly trapezoidal, the converging sides with fine elevated bead, the angles and

unreflexed apex continuously rounded, the apical bead thickened and more elevated; surface feebly convex, with sparse, very fine, shallow, crescentiform punctuation; suture fine, broadly and completely obliterated medially; antennal club relatively a little larger than in the preceding male type; prothorax more transverse, nearly two-thirds wider than long, the sides feebly converging from base to apex and more strongly arcuate; basal angles broadly rounded, the apical sharp; punctures everywhere very sparse, minute, a little more distinct laterad; scutellum flat, acutely ogival, smooth, having merely a few minute punctures basally; elytra two-fifths longer than wide, fully a third wider than the prothorax, the sides abruptly inflated at three-fifths, the edge there declivously explanate but perfectly even and without trace of callus or external sinus, the prominence more abruptly disappearing posteriorly than anteriorly, where the edge is very slightly thickened to about basal third: punctures sparse, rather small, shallowly impressed, partially lineate, finer, closer, deeper and more distinct but confused postero-laterad; pygidium extremely smooth and polished, sculptureless, except a slight punctulation at the extreme sides; hind tarsi but very little longer than the tibiæ. Length (♀) 16.0 mm.; width 9.4 mm. Mexico (Jalapa).....***politicauda** n. sp.

Form still more broadly oval, the body and legs throughout blackish, the pronotum and elytra wholly pale rufo- and flavo-testaceous respectively; head and clypeus (♀) deep black, small, not quite two-fifths as wide as the prothorax; front feebly, medially bi-impressed, minutely, not closely punctate, impunctate along the median convexity and at base; clypeus one-half wider than long, the sides distinctly converging, feebly arcuate and minutely beaded to the rounded apex, which is very much thickened and strongly elevated, with the inner line of the summit sharply defined; surface finely but rather strongly, closely punctato-scabrous; suture fine but evident throughout, broadly sinuate medially; moderate eyes and the antennal club as in the preceding; prothorax short and very transverse, about twice as wide as long, the sides strongly, evenly rounded, more converging apically, the basal angles moderately rounded, the apical not very sharp and moderately prominent; base feebly sinuato-truncate at the scutellum; punctures as in the preceding; scutellum obtusely ogival, smooth, slightly rugulose at base; elytra two-fifths longer than wide, between a fourth and fifth wider than the prothorax, rather strongly arcuate at the sides, which are rather rapidly convergent and arcuate behind the middle, the edges not modified, except by a slight thickening from basal fourth to behind the middle; surface broadly impressed at about outer third, feebly, rather finely and not at all closely punctate, the punctures confused almost throughout but with two double series visible basally on each; pygidium glabrous, very smooth, somewhat convex along the middle, nearly sculptureless though feebly scabriculate toward the ends, the lower margins not sinuate; hind tarsi not very slender and about as long as the tibiæ. Length (♀) 18.0 mm.; width 9.8 mm. Mexico (Jalapa).....***atriceps** n. sp.

The type of the first of the above species was received under the name *sanguinicollis* Burm., but the description of Burmeister will not apply satisfactorily to either it or *politicauda*. It is probable that the genus will include *sanguinicollis*, however, as well as *epistomalis* Bates, *lævicauda* Arrow and some others; the latter species is probably allied closely to *atriceps*, but is larger, apparently more elongate and the pygidium is said to be piliferously punctulate; it is also from a different locality—Guatemala. The above species are all represented by single examples.

The genera *Halotosia* and *Aclinidia*, of the table, need not occupy further attention at present; the former is founded upon the very isolated *Cyclocephala fasciolata* of Bates, having not only a very distinctive scheme of ornamentation, but an extremely broad ligula, and the latter upon the Gryllotalpid-like *castanea* Fabr., having not only a remarkably different facies from any other species, but rather radically specialized abdominal structure in the male. It is true that the essential generic characters of many of the genera here proposed are sexual in nature, but such criteria in many parts of the Coleoptera are necessary and legitimate, as for example in some sections of the Pselaphidæ.

Dyscinetus Harold.

Chalepus MacL.

The mandibular differences between *Dyscinetus* and the true Cyclocephalids are so radical, and accompanied by such marked divergence in the general habitus of the body, that it and some other allied generic and subgeneric groups of species should be considered a distinct subtribe of the Cyclocephalini in any complete treatment of the tribe. The body is elongate, subparallel, only moderately convex, generally deep black in color and with much thicker and denser integuments than in most of the true Cyclocephalids. The species are numerous and distributed almost throughout both of the American continents, excepting the Pacific coast provinces. There are at least two subgeneric groups as follows:

Claw-joint of the anterior male tarsi swollen, the inner claw notably large, unequally split at apex, with the smaller ramus very slender as usual in the tribe . . . . . Group I

Claw-joint not at all swollen, slender, the larger claw of a completely

different structure, being small, slender and widely forked through more than half its length, the arms widely diverging.....Group II

Possibly the very small species, with much less developed head, allied to *bidentatus* Burm., will constitute another subgenus, but the male is unknown to me at present. In fact the male, throughout this part of the tribe, seems to be much less abundant than the female, which is another point of difference.

Group I.

Subgenus **Dyscinetus** in sp.

As there are a considerable number of species in my collection, most of which seem to be undescribed, I have ventured to include several South American species in the following statement:

Body larger in size, with the head well developed, the prosternal process dilated at apex.....2

Body small in size, the head less developed. Brazil.....11

2—Pygidium discretely punctate in both sexes; clypeus rugulose.....3

Pygidium at least in part densely scabriculate in both sexes; clypeus finely and sparsely punctate.....9

3—Elytra with the punctures very fine and feeble, sometimes obsolete.4

Elytra with the punctures everywhere very distinct.....7

4—Abdominal segments without trace of transverse series, confusedly punctate toward the sides. Form short and subquadrate, deep black, shining, the legs blackish-piceous; head rather more than half as wide as the prothorax, with sparse and moderate shallow punctures, the clypeus broadly trapezoidal, shining, not densely or strongly rugulose, the edges all sharply reflexed, the apex sinuato-truncate, the apex below the margin externally broad and minutely, closely punctulate; surface gradually declivous toward the sides, the suture distinct, broadly, feebly angulate; antennal club small as usual; mentum tumid anteriorly; prothorax short and transverse, a little wider than the base of the elytra, fully twice as wide as long, with parallel and rounded sides, broadly rounded basal angles and thick convex base, the punctures sparse and distinct but shallow; scutellum broadly ogival, perfectly sculptureless; elytra barely as long as wide, obtuse at apex, the sides strongly arcuate, slightly more prominent medially, the edge thick, thinner apically; surface smooth, finely, sparsely punctate, with three flat double series, the punctures toward the sides becoming almost obsolete; pygidium with coarse and irregular, unevenly distributed and rather shallow punctures; tarsi slender, rather short. Length (♀) 16.0 mm.; width 9.3 mm. Mexico (near the city),—Wickham.

***subquadratus** n. sp.

Abdominal segments each with a single series of punctures toward the sides, with a few dispersed punctures also at the extreme sides; body more elongate-oval, the elytral sculpture still more obsolete.....5

5—Pygidium (♀) impressed at the middle of the lower margins. Body oblong, convex, polished and very shining, black, the legs slightly less black; head large, distinctly more than half as wide as the prothorax; front rather strongly but not densely punctate throughout the width; clypeus very transverse and strongly trapezoidal, sparsely rugulose, sloping laterally, punctulate latero-basally, the angles rounded; apex sinuato-truncate; edges sharply reflexed and even throughout; suture rectilinear, deep; antennæ and mentum nearly as in the preceding; prothorax nearly three-fourths wider than long, the sides broadly arcuate, gradually more converging from rather behind the middle; punctures very fine and remote throughout; scutellum nearly smooth; elytra a third longer than wide, a fourth wider than the prothorax, the sides rather strongly, subevenly arcuate, not at all more prominent at the middle, the edges thick, thinner apically, having just within, at about basal fourth, a rather distinct canaliculation; punctures excessively minute and sparse, almost obsolete; pygidium strongly convex, polished, the punctures fine and remote, becoming rather coarse but shallow and close-set laterally; hind tarsi rather thick, much shorter than the tibiæ; apex of the prosternal process strongly bulbose. Length (♀) 20.0 mm.; width 10.3 mm. Mexico (Durango City),—Wickham.

***lævissimus** n. sp.

Pygidium (♀) not impressed at the lower margins; body smaller in size though nearly similar in color, sculpture and habitus.....6

6—Head notably large in both sexes, much more than half as wide as the prothorax, finely, sparsely punctate; clypeus as in the preceding but with the oblique sides rather more arcuate and the obtuse apical angles less broadly rounded, the apex deeply sinuato-truncate, the edges sharply reflexed; suture fine, almost rectilinear, sometimes feebly angulate at the middle; prothorax two-thirds to three-fourths wider than long, as in the preceding but with the sides more parallel and less anteriorly converging, broadly, evenly rounded; punctures everywhere remote and extremely small, sometimes gradually more distinct laterad; scutellum sharply ogival, perfectly smooth; elytra as in the preceding but not quite so elongate, very little wider than the prothorax, more dilated posteriorly in the male and there much more exceeding the prothorax in width, the sides arcuate, very slightly more prominent medially in the female; punctures sparse and very fine, having the usual arrangement, sometimes almost completely obsolete; pygidium (♀) less convex than in *lævissimus*, with the feeble, sparse and shallow punctures smaller, sometimes much more distinct toward the ends but never so coarse or irregular as in the preceding; in the male they are notably coarser than in the female, irregularly distributed but sparse; smaller ramus of the larger anterior tarsal claw very slender and much shorter than the larger part of the claw. Length (1 ♂, 6 ♀) 16.0–19.0 mm.; width 8.4–9.8 mm. Arizona (Huachuca Mts. and other unrecorded parts). [*Chalepus obsoletus* Lec.].....**obsoletus** Lec.

A—Nearly similar to *obsoletus* but with the head noticeably smaller, only about half as wide as the prothorax, the clypeal angles more

broadly rounded and the suture more deeply impressed; prothorax rather more transverse and more anteriorly narrowed from somewhat behind the middle, the punctures broadly obsolete medially and anteriorly throughout the width, distinct latero-basally but not near the sides; elytra nearly similar and with polished surface and obsolete punctures but still more obtuse at apex; pygidium similar, but with the sparse punctures everywhere notably coarse and conspicuous, though sparse and very shallowly impressed. Length (♀) 16.0 mm.; width 8.5 mm. Arizona (Tuçson). A single example.....*gilanus n. subsp.

—Prothorax parallel, with very feebly arcuate sides, which become more rapidly arcuate and converging well before the middle. Color black, the legs dark piceo-rufous; lustre highly polished; head much more than half as wide as the prothorax, with shallow, moderate, very sparse punctures; clypeus transverse and strongly trapezoidal, the oblique sides barely at all arcuate, the obtuse angles distinct, not more than blunt; apex deeply sinuato-truncate, the oblique lower frontal part densely and finely punctate; edges sharply and equally reflexed; surface sloping toward the sides, the sparse ruguliform lines studded with minute projections; suture not clearly defined except at the sides; antennal club small; mentum smooth, convex anteriorly; prothorax only about three-fifths wider than long, convex, the punctures everywhere remote, minute, a little stronger toward the sides; scutellum with some very minute punctulation, broadly smooth peripherally; elytra (♀) about a fourth longer than wide, less than two and one-half times as long as the prothorax, broadly, circularly rounded at apex, a fourth wider than the prothorax, the broadly arcuate sides a little more prominent just behind the middle, the lateral bead thick, thin posteriorly and wholly obsolete around the apex; punctures small, deep, simple, sparse, with four double series separated by nearly flat surfaces, the outermost series feeble, the punctures of the second and fifth interspaces broadly confused, those of the third and fourth in very irregular double series; pygidium with deep rounded and not very coarse, rather sparse and evenly distributed punctures; abdominal series lateral and rather confused. Length (♀) 18.5 mm.; width 9.5 mm. Brazil (Rio Grande do Sul), *obsidianus n. sp.

Prothorax slightly narrowed from base to apex and with evenly and distinctly rounded sides throughout.....8

8—Body (♂) oblong in form, convex, shining, deep black, the legs and under surface barely visibly paler; head somewhat more than half as wide as the prothorax, with rather distinct but feebly impressed punctures, smooth at base; clypeus nearly as in the preceding, the edges sharply reflexed except near the base, the apex sinuato-truncate, the angles moderately rounded, the interlacing and rather sparse wavy rugulosity simple; prothorax nearly three-fourths wider than long, the sparse punctures everywhere distinct; scutellum smooth, obtusely ogival; elytra parallel, with evenly and very moderately arcuate sides, distinctly longer than wide, abruptly very obtuse at apex and only a little wider than the prothorax, widest at the

middle; punctures not coarse, shallow, annular, simple and deeper suturally, the four double series separated by flat intervals, all distinct, broadly confused elsewhere but not at all close-set; pygidial punctures rather coarse, deep, closer basally than apically; hind tarsi very short, about two-thirds as long as the tibiæ. Length (♂) 17.0–19.8 mm.; width 8.6–10.8 mm. Kansas (Hamilton Co. and Fort Dodge) and Colorado. Six examples..... **puncticauda** Csy.

Body (♂) much smaller, a little more inflated posteriorly, similar in coloration and nearly as shining, the legs barely less than black; head and clypeus nearly similar; prothorax much shorter, very nearly twice as wide as long, the sides rather more strongly rounded; punctures not quite so sparse and larger, being subequal to those of the head, whereas in the preceding they are very much smaller, except toward the sides; scutellum smaller, much more acute and triangular, having a few distinct though not coarse punctures; elytra slightly elongate, relatively wider, being fully a fifth wider than the prothorax, less obtusely rounded at apex, the surface less polished, perfectly even throughout, the punctures similarly annulate and very moderate in size, rather less sparse, the four double series and the sutural more impressed series similar; coarse punctures of the pygidium rather less sparse; hind tarsi more slender, about three-fourths as long as the tibiæ; larger claw of the anterior tarsi only moderately broad, the inner ramus slender, gradually acuminate and extending as far as the tip of the larger ramus, prolonged in line with the claw margin, the larger ramus obliquely pointed, causing a marked divergence of the two rami; in *puncticauda* the larger claw is larger and very much broader, the small ramus very slender and much shorter than the larger ramus, which is more obtusely pointed, with its inner outline more rounded, so that the sinus separating the two rami is smaller and narrower; in both species the slender ramus is in direct prolongation of the edge of the claw and does not diverge in direction. Length (♂) 15.0 mm.; width 7.8 mm. Mexico. [*Dyscinetus picipes* Bates nec Burm.]..... ***ebeninus** n. sp.

9—Elytral punctures small but deep, simple, not annuliform; pygidium only partially scabriculate. Body stout, oblong, rather convex, shining, deep black, the under surface and legs only just visibly less than black; head well developed, distinctly more than half as wide as the prothorax, finely, sparsely punctate; clypeus strongly transverse, trapezoidal, the sides less oblique and more arcuate, the apex more broadly and more feebly sinuato-truncate, the angles much more broadly rounded and the margins all much thicker and less elevated than in the preceding section of the genus; surface similarly declivous antero-laterad, but almost completely sculptureless, a few small punctures distinct near the fine suture, but elsewhere they are extremely minute; antennæ dark rufous; prothorax very nearly twice as wide as long, the sides strongly, evenly arcuate, only very slightly converging from the broadly rounded basal angles to the apex; punctures everywhere sparse, small but distinct medially, rather strong and deep toward the sides; scutellum acutely ogival,

perfectly sculptureless; elytra large, nearly a fourth longer than wide, with arcuate sides, widest slightly behind the middle and fully a fourth wider than the prothorax, very obtuse at apex; three discal geminate series of small close-set punctures feebly impressed, the included surfaces feebly convex, the lateral geminate series less defined, of finer and sparser, feebler punctures; flat interspaces with sparse and confused punctures, which do not approach closely to the geminate series; pygidium (♂) finely, densely scabriculate in basal, polished and with coarse sparse punctures in apical, half, everywhere with minute sparse erect hairs; hind tarsi distinctly shorter than the tibiæ; anterior tarsi with the claw-joint scarcely at all dilated, slender and but feebly sinuate beneath, the larger claw smaller than usual, extremely bent near the base, the smaller ramus not very fine, a little shorter than the larger, which is symmetrically and axially pointed at apex. Length (♂) 19.8 mm.; width 10.4 mm. Nicaragua (Castillo) ..... ***obtusus** n. sp.

Elytral punctures generally not so small but shallow and annulate, the annuli open behind; anterior claw-joint of the male dilated and strongly bent as usual and in part densely strigilate beneath like the soles of the third and fourth joints, the larger claw more developed and less abruptly bent near the base, these tarsal characters merely surmised in the case of *bitumorosus*, the type of which is a female 10

10—Form oblong-oval, rather stout, moderately shining, deep black, the under surface and legs barely less black; head scarcely more than half as wide as the prothorax, subsimilar throughout sexually, rather strongly but not closely punctate, sometimes less so along the median line; clypeus trapezoidal, with feebly sinuato-truncate apex and thick, feebly elevated, interiorly sharp margins, very variably punctate, sometimes rather strongly but never closely throughout, occasionally almost completely impunctate, excepting a few fine punctures basally; prothorax three-fourths to four-fifths wider than long, the sides broadly and moderately rounded and feebly converging from the moderately rounded basal angles to the apex; punctures sparse but generally rather strong and deep throughout; scutellum ogival, smooth; elytra about a fourth longer than wide though varying in width, only very little wider than the prothorax, the apex broadly rounded but not very obtuse; sides (♂) feebly arcuate and even, the greatest width somewhat behind the middle, or (♀) distinctly and arcuately prominent a little behind the middle; on each, four smooth and feebly convex costules are inclosed by feebly impressed series of extremely close-set punctures, the interspaces with sparse confused punctures of the same kind, generally a little stronger near the suture; pygidium (♂) opaque and extremely densely, finely and evenly scabriculate throughout, or (♀) similar but with two feeble subapical elevations, on which the sculpture becomes very irregularly and intricately smooth; hind tarsi not quite as long as the tibiæ, not differing much sexually. Length (12 ♂, 29 ♀) 13.5–18.5 mm.; width 7.0–10.0 mm. Long Island to the Carolinas and westward to Louisiana, Oklahoma

and Iowa. Very abundant and variable in size. [*Chalepus trachypygus* Burm.]..... **trachypygus** Burm.

A—Similar but rather more elongate, the elytra of the female very much less prominent at the sides submedially and with the punctures limiting the costules widely separated in the series, the punctures of the intervals also larger and less numerous; pygidium similar, except that the intricate smooth area extends throughout the apical part medially. Length (♀) 14.7 mm.; width 8.0 mm. Pennsylvania..... **discedens** n. subsp.

Form much narrower, more elongate and more oval than in *trachypygus*, the surface rather more convex and more highly polished, somewhat pitchy-black; head distinctly more than half as wide as the prothorax, strongly, sparsely punctate, the clypeus nearly similar but a little shorter and still more declivous antero-laterad, the suture obliterated or lost in some confused punctuation medially; prothorax shorter and narrower, the sides more converging from base to apex and more strongly arcuate, the basal angles similar; sparse punctures even coarser and deeper, conspicuous; scutellum very acutely ogival; elytra more elongate, a third longer than wide, circularly rounded behind, fully a fourth wider than the prothorax, the sides as in the preceding species, the sculpture nearly similar but with the surface much more polished; pygidium similar and likewise with excessively minute, sparse and erect hairs; anterior tarsi of the male with the claw-joint slightly less inflated. Length (♂) 14.5 mm.; width 7.3 mm. New York..... **borealis** n. sp.

Form nearly as in *trachypygus* but rather more elongate, with more developed head and larger, more prominent eyes; head much more than half as wide as the prothorax, with rather strong sparse punctures throughout; clypeus nearly similar but somewhat impressed transversely at base; prothorax scarcely three-fourths wider than long, the sides evenly and moderately converging and feebly, evenly arcuate from the rather broadly rounded basal angles to the apex; punctures everywhere uniform and rather coarse and deep, well separated; scutellum ogival, almost punctureless; elytra about a fifth longer than wide and fully a fourth wider than the prothorax, circularly rounded behind, the sides distinctly more arcuate and prominent very near the middle; sculpture as in *trachypygus* but with the punctures smaller and relatively still sparser, those of the series bounding the very feebly convex costules similarly extremely close-set; pygidium very densely and finely scabriculate and opaque throughout, having near the apex two widely separated tumors, which are irregularly and intricately smooth nearly as in *trachypygus* but much less extendedly, the tumors more abruptly formed than in that species. Length (♀) 19.0 mm.; width 9.8 mm. Guatemala (Toyahaj)..... ***bitumorosus** n. sp.

11—Prosternal process dilated, oval and flattened at apex: that is, of the usual form in the genus. Body oblong, strongly convex, moderately shining, black throughout; head short, the eyes small, the front with fine, transversely interlacing rugulæ; clypeus very short, unusually declivous antero-laterad, smooth and sculptureless, biobliquely,

medio-interruptedly ridged at base, the very oblique sides merging gradually through broadly rounded angles into the broadly and evenly arcuate apex, the margins finely, feebly and very moderately elevated throughout; suture obliterated; antennal club small; mentum setose; prothorax barely one-half wider than long, subparallel and but slightly narrowed apically, the sides evenly and rather strongly arcuate; basal angles only moderately rounded; punctures distinct though not coarse, deep, remotely scattered; scutellum broadly ogival, with a few fine punctures basally; elytra only a little longer than wide, less than twice as long as the prothorax and not wider, circularly rounded behind in nearly apical half, the sides not modified in the female; surface with three rather coarsely impressed and closely punctured double series of punctures and a feeble external double series, the three costules very feebly convex; punctures of the intervals confused suturally and more broadly externally but very irregularly uniseriate medially, the punctures throughout small, shallow and completely annular, not open behind; pygidium smooth, finely, sparsely punctate, rather closely and finely scabriculate basally and more completely laterad; last ventral (♀) with a broad polished margin throughout. Length (♀) 11.3 mm.; width 6.3 mm. Brazil (Rio Grande do Sul)..... ***parvus** n. sp.

Prosternal process slender, gradually acuminate and laterally compressed apically. Body black, with the legs dark piceo-rufous to dark rufo-piceous throughout, highly polished, more elongate and cylindric than the preceding, strongly convex; head not so short or broad, the eyes a little larger; front coarsely rugose, finely, sparsely punctate at base; clypeus differing greatly, short, strongly trapezoidal and flat, coarsely and transversely rugose, the very oblique sides straight, the apex perfectly straight, meeting the sides in very obtuse but not at all rounded angles, the edges throughout thinly and sharply elevated; base with a rather sharply elevated, transverse, medially interrupted ridge, the fine suture behind the ridge evident; prothorax much shorter, nearly two-thirds wider than long and much less than half as long as the elytra, the sides evidently converging and feebly, evenly arcuate from the broadly rounded basal angles to the apex; punctures sparse but rather strong; base similarly broadly and feebly sinuate at each side of the feeble median lobe; scutellum triangular, virtually smooth; elytra fully a fourth longer than wide, circularly rounded in apical two-fifths, parallel, barely wider than the prothorax; punctures rather deeply impressed, relatively coarse, elliptic-annular, narrowly open behind, the punctures of the geminate series so close as often to be separated by broad transverse septa, forming a rather rugulose surface, the general punctures confused, the costules nearly flat; pygidium shining, with coarse deep close-set punctures throughout; hind tarsi slender, much shorter than the tibiæ. Length (♀) 10.8–11.7 mm.; width 5.9–6.3 mm. Brazil (Para),—Baker. Six examples, all females.

***parensis** n. sp.

Obsidianus, as described above, is a species allied to *rugifrons*

Burm., but it has the anterior clypeal margin evenly sinuate and very evenly, moderately reflexed throughout the width; the thoracic punctures are evidently finer and the lustre more shining; finally, the punctures of the pygidium are very even and evenly distributed throughout. *Ebeninus* is probably the species identified as the West Indian *picipes* Burm., by Mr. Bates, but Burmeister states of *picipes* "vordere erhabene Rand des Kopfschildes in der Mitte leicht ausgebuchtet, zweizackig"; there is no suggestion of any such conformation in the type of *ebeninus* and, besides, it seems to represent a smaller species than *picipes*—16–18 mm.—and with much darker, in fact virtually black, legs. *Obtusus* is evidently allied to *frater* Bates, but the author states that the anterior claw-joint of the male in that species is robust, deeply sinuate beneath and with the larger claw very wide, no one of which characters will suit the male type of *obtusus;* the locality of *frater*, Vera Cruz, is also rather different zoologically. It is to be regretted that the type of *discedens*, defined above, is unique, for it may be possible that the peculiar sculpture described above is a malformation; it is for this reason that in venturing to define the form, I have thought it prudent to give it no higher than a varietal status provisionally.

The above described type of *parvus* was sent to me under the name *bidentatus* Burm., but though apparently allied to that species, it differs in the form of the anterior margin of the clypeus; besides this, the elytral punctures of *bidentatus* are said by Burmeister to be "Bogenstrichen die hinten offen sind," and further that the margin above the hind coxæ is "schwielig verdicht"; there is no trace of this in *parvus*. These small species, such as *parvus* and *parensis*, are not only abnormal Dyscinetids but are greatly diversified structurally among themselves; the presence of the male, which seems to be rare, would doubtless demonstrate a number of isolated structures of more or less subgeneric nature; the form of the prosternal projection of *parensis* is alone so peculiar as to indicate a different subgenus, or perhaps more justly genus, and the clypeus differs greatly from that of *parvus*. The entire Dyscinetid group is in need of thorough revision; only a small proportion of the species have been described.

Group II.

Subgenus **Palechus** nov.

While the general habitus of the body is almost exactly as in the preceding group, the anterior claws and claw-joint of the male are of an absolutely different form; so radical is this peculiarity, that I can see no other appropriate course than to suggest for *Dyscinetus lævipunctatus* Bates and *dubius* Oliv., a distinct subgenus. There are, however, a few other apparent structural differences, such as the longer hind tarsi, these being always shorter than the tibiæ in *Dyscinetus* and fully as long as the tibiæ or longer here, also the much less convex male pygidium. Not having seen either of the species just mentioned, I would prefer to regard the following as the type of the subgenus:

Body elongate-oval, only moderately convex, very shining and deep black, the legs and entire under surface, excepting the abdomen, piceo-rufous; head distinctly more than half as wide as the prothorax, strongly but not densely punctate, sparsely and less strongly toward base; clypeus trapezoidal, barely twice as wide as long, with feebly arcuate oblique sides, broadly and subangularly sinuate apex and rounded angles, smooth, with sparse distinct and irregularly distributed punctures, the surface moderately declivous anterolaterad; margins with very thick, moderately elevated, internally sharply-edged beading, not different at apex; suture extremely fine, entire; ligula very broadly truncate; prothorax three-fourths wider than long, the sides feebly convergent from base to apex and evenly, rather strongly arcuate; punctures not coarse but strong, deep and very sparse throughout; scutellum triangular, perfectly smooth; elytra two-fifths longer than wide, circularly rounded in about apical two-fifths, the sides parallel and arcuate at the middle, distinctly wider than the prothorax; punctures small, very shallow, annular, broadly open behind, very close-set in the series bounding the four flat costular intervals, and also in the subsutural series, elsewhere sparsely scattered; pygidium very densely scabriculate and opaque, with irregularly ramifying smooth areas in about apical half, not at all bitumorose, the entire surface having extremely minute coarse, sparse and erect shining hairs. Male with the anterior tarsi very slender and filiform throughout, the last joint not at all swollen or modified beneath, the claws small, the inner broadly forked nearly to the middle; hind tarsi as long as the tibiæ. Length (♂) 18.8 mm.; width 9.4 mm. Amazon Valley.....***histrio** n. sp.

Differs from *dubius*, from Cayenne, in its much flatter elytral costules, these being in fact not at all different from the other intervals in convexity; the minute pubescence of the pygidium

doubtless exists in the male of both *lævipunctatus*, of the Mexican fauna, and *dubius*, but was not mentioned by Mr. Bates.

Parachalepus n. gen.

I would suggest a distinct genus under the above name for certain Dyscinetids, which are notably aberrant in pygidial structure, the pygidium proper being rigidly united with the propygidium. There are also two subgeneric groups here as follows:

Pygidium almost of the usual length and densely hairy.....Group I
Pygidium very short, glabrous, forming scarcely more than a broad polished margin of the propygidium; head more developed..Group II

Species of both these groups seem to be much less numerous than those of *Dyscinetus*.

Group I.

Subgenus **Parachalepus** in sp.

This group comprises *barbatus* Fabr., *hydrophiloides* and *luridus* of Burmeister, and the following:

Form broadly elongate-oval, moderately convex, strongly shining, deep black throughout, the legs not paler, the lustre sometimes slightly greenish, especially in the male; head barely more than half as wide as the prothorax, sparsely and extremely minutely punctulate, the clypeus similarly and only a little more distinctly punctate, feebly trapezoidal, twice as wide as long, the apex broadly sinuato-truncate, with broadly rounded angles; entire edge margined with a broad but feebly elevated bead, which, along the sides basally, flares outward, becoming the crest of the anterior canthus of the eyes; suture entire, very fine, feebly sinuate medially; prothorax three-fourths or more wider than long, the sides slightly converging, evenly and rather strongly arcuate, from the well rounded basal angles to the acute apices; punctures sparse and very minute, becoming more distinct laterally; scutellum sharply triangular, almost perfectly smooth; elytra much wider than the prothorax, with very fine, sparse, shallow, posteriorly open annular punctures, the double series evident but not conspicuous, the entire surface smooth and even; apex obliquely arcuately narrowed behind the middle to the unusually narrowly rounded apex; sides broadly arcuate, strongly arcuate and distinctly explanate and thickened medially in the female, giving a rhomboidal aspect to the body; pygidia almost completely covered by the elytra, the hairs of the propygidium very long, yellow, those of the pygidium short, dense, the sculpture and pubescence ending not very abruptly at a narrow glabrous shining margin; hind tarsi slender, as long as the tibiæ (♂) or shorter (♀). Length (♂♀) 19.8–20.5 mm.; width 10.0–11.2 mm. Brazil (Rio Grande do Sul).....***rhomboidalis** n. sp.

From *hydrophiloides* Burm., this species differs decisively in many directions, for in *hydrophiloides* the color is clear brown, with darker head, the front near each eye having a cluster of punctures and the length as published is only 16 mm., all of which characters are widely at variance with *rhomboidalis*. From the West Indian *barbatus*, it differs in having the legs perfectly unicolorous, not with the femora rufescent, as stated by Burmeister of *barbatus*. Mr. Bates suggests that *hydrophiloides* and *barbatus* are the same species, but I feel confident that this opinion is the result of a misconception.

In the male of *rhomboidalis* the claw-joint of the anterior tarsi is large and swollen as in *Dyscinetus*, but the larger claw is different; it is well developed and abruptly bent near the base, but it is not at all split at apex, but arcuately and somewhat obliquely obtusely pointed; its flattened under surface is feebly bicarinulate and, near the apex on the inner side-margin, there is a small obtuse tooth projecting downward, not visible from the upper surface of the claw.

Group II.

Subgenus **Chalepides** nov.

Besides *alliaceus* and *fuliginosus*, of Burmeister, this subgenus will include the following, which may be regarded as the type:

Body elongate, subparallel, strongly convex, very smooth and shining, dark castaneous in color, the legs slightly more rufous, the elytra paler brownish-yellow throughout; head notably large, fully two-thirds as wide as the prothorax, the eyes moderate though rather convex; front with rather small but distinct, somewhat close-set punctures, finer and sparse basally; front and basal part of the clypeus flattened, the clypeus with close-set, shallow, arcuate punctures throughout, trapezoidal, more than twice as wide as long, broadly sinuato-truncate at apex, with broadly rounded angles; edges evenly and moderately but rather sharply elevated internally; surface strongly declivous toward the angles; suture fine, entire, distinctly sinuate medially; mentum glabrous, setose only along the sides; prothorax three-fourths wider than long, subparallel, with evenly and rather strongly rounded sides, the basal angles only moderately rounded; base nearly transverse, feebly sinuate in the usual position near each side; apical bead entire; punctures sparse, fine but distinct, becoming more conspicuous laterad; scutellum smooth, sharply triangular; elytra (♀) but little less than one-half longer than wide, slightly wider than the prothorax, circularly rounded in apical two-fifths, the sides parallel and broadly, evenly

arcuate, the edge broadly thickened at the middle but barely at all more prominent laterally; punctures very small, shallow, very sparse and inconspicuous, each a minute closed ring; the four double series are evident but not at all conspicuous, the punctures in their completely unimpressed bounding series widely spaced, the inclosed areas perfectly flat and similar to the rest of the surface; pygidium glabrous and smooth, broadly angulate at apex and more obtusely, angularly sinuate anteriorly; propygidium covered by the elytra; tarsi slender, much shorter than the tibiæ. Length (♀) 20.0 mm.; width 9.7 mm. Brazil (Esp. Santo).....***eucephalus** n. sp.

Differs from *alliaceus* in the apparently finer elytral punctures, having the form of minute closed circles, and less abbreviated pygidium, also in its bicolored upper surface, the elytra not being paler in that species; from *fuliginosus* it differs in the much finer punctures throughout the upper surface and in the flat costular intervals.

Stenocrates Burm.

My collection contains at present only two species of this distinct South American genus, *laborator* Fabr., and *cultor* Burm. *Stenocrates* seems to include but few species, which are distinguishable among themselves by strongly differentiated sculptural features; in *laborator*, for example, the pronotum is not at all punctured except toward the sides, where the punctures are strong and conspicuous; in *cultor*, they are uniformly distributed and strong throughout; in both, the side margins are very thick and convex, but especially so in *laborator*, which is said by Mr. Bates to occur also in Mexico.

Tribe PENTODONTINI.

LeConte, following Lacordaire, makes of this division of the Dynastinæ a simple group of the Oryctini, and, in many features of general structure as well as formation of the tarsi, there is undeniably a close inter-relationship, but, because of the almost complete absence of sexual modifications of the head and pronotum, I would prefer to consider the Pentodontids as a tribe distinct from the Oryctini, as held by Bates and others. That the Pentodontini, in spite of their Oryctid affinities, occupy an intermediate position in the series, is shown by the fact that in several of the genera, the anterior tarsi of the male are modified exactly as in the Cyclocephalini, and some of the species of *Ligyrodes*, such as *ebenus*,

resemble some Cyclocephalids in general habitus and in the more nearly filiform tarsi. At the other end of the series *Bothynus* and *Anastrategus* lead directly to the Oryctini in habitus and general structural characters. The Cheiroplatids are so aberrant in many ways, that the propriety of erecting for them a distinct tribe is not wholly questionable, but it would be almost as difficult to place such a tribe in harmonious succession with the others as in the case of *Oryctomorpha*. The known American genera may be arranged as follows:

Propygidium moderate in size, the pygidium sometimes greatly developed, generally having its upper margin arcuate, at least in the female. . 2
Propygidium large, sinuating the base of the pygidium; anterior tarsal claws variable 12
2—Anterior tarsi (♂) with swollen claw-joint, the anterior claw broad, abruptly bent at base and variously modified at tip; body oblong, convex, moderately large in size; mandibles distinctly exposed and externally tridentate or bidentate; stridulating organs as in *Ligyrus*. [Type *Scarabæus relictus* Say] . . . . . **Ligyrodes**
Anterior tarsi slender and with simple claws in both sexes 3
3—Pygidium simple in both sexes 4
Pygidium (♀) transversely tumid at or above the middle; mandibles well exposed at the sides; clypeus narrowly rounded or subprominent at tip; body of rather large size 11
4—Mandibles distinctly exposed externally, usually tridentate; clypeus reflexed at the extreme apex 5
Mandibles hidden, small; clypeus reflexed behind the apex 8
5—Clypeus bidentate at apex 6
Clypeus unidentate at apex 7
6—Ligula with sharply elevated side margins; mandibles bidentate; stridulating organs feebly developed. [Type *Heteronychus humilis* Burm.] . . . . . **Euetheola**
Ligula simple not margined at the sides; stridulating organs well developed. [Type *Scarabæus gibbosus* DeG. (*Podalgus variolosus* Burm.)] . . . . . **Ligyrus**
7—Body nearly as in *Ligyrus*, except that the pronotal impression is relatively larger and deeper. [Type *Ligyrus ruginasus* Lec.] **Oxygrylius**
8—Pronotum without an anterior impression in either sex; stridulating organs wanting 9
Pronotum with an anterior impression (♂), wholly wanting (♀) 10
9—Post-apical transverse carina of the clypeus entire. [Type *Bothynus pyriformis* Lec.] . . . . . **Pseudaphonus**
Post-apical carina tridentate. [Type *Scarabæus tridentatus* Say] **Aphonus**
10—Post-apical elevation medially sinuate to transverse; body more cylindric than in the two preceding genera, at least in the male, though not always in the female. [Type *O. cultripes* Fairm.] **Orizabus**

11—Mandibles entire and rounded externally; pronotum without impression in either sex; pygidium arcuate at base in both sexes, very large and convex (♂), much shorter, broader and transversely tumid at the middle (♀). [Type *A. dunnianus* Riv.] (*Aphonides* Riv.).....**Anoplognatho**

Mandibles variably tridentate externally; pronotum with a rather large anterior impression in both sexes; pygidium (♂) transverse, moderately convex and simple, its upper margin feebly sinuato-truncate, or (♀) larger, arcuate at base and transversely tumid above the middle. [Type *Strategus cessus* Lec.].....**Anastrategus**

12—Body oblong, more depressed as a rule; mandibles strongly and acutely tridentate externally; propygidium very large, more or less strongly sinuating the upper margin of the pygidium, which is never transversely tumid in the female; larger anterior tarsal claw (♂) simple or diversely toothed; stridulating organs well developed, rather more so than in *Anastrategus*. [Type *Corynoscelis quadridens* Tasch.].....***Bothynus**

As *Bothynus* Hope, is represented only by neotropical species and as only *quadridens*, of those in my collection, is certainly identified, I omit any further reference to that genus, except to state that the female of a species labeled *cunctator* Mann., at hand, bears so close a resemblance in general habitus to *Strategus cessus* Lec., that there can be no further doubt of the propriety of erecting a distinct genus for *cessus* and *splendens* to be placed in this tribe rather than in the Oryctini.

Ligyrodes n. gen.

The species of this genus have hitherto been regarded as a section of *Ligyrus* and most of the structural characters, including the organs of stridulation, accord very well, but the sexual modification of the anterior tarsi in the male, an important character in itself, betraying a closer affinity with the Cyclocephalini, is supplemented by others, such as the transverse slit-like anterior abdominal spiracles, nude apex of the post-coxal prosternal process and very different general habitus of the body, so that the necessity for generic separation from *Ligyrus* seems abundantly demonstrable. In *Euetheola*, *Ligyrus gibbosus* and others of that type, the abdominal spiracles on the inner slope of the lateral margins of the first three segments, are broadly oval but only slightly transverse. The stridulating area on the inner surface of the elytra is more coarsely sculptured than in *Ligyrus* and consists of minute granules forming close-set series. In *Ligyrus gibbosus* the granules are similar

but smaller and still more close-set. In *Euetheola rugiceps* Lec., there are no granules, but the corresponding surface has a system of close-set and excessively minute points, so minute in fact that I cannot surely determine whether they are raised points or punctulation; at any rate, they scarcely have a sound producing function. In *Ligyrodes* the mentum is convex, gradually depressed basally, setose only along the sides and the ligula is broad and broadly truncate; the median tooth of the mandibles in typical *Ligyrodes* is larger and longer than the two lateral and is generally somewhat obliquely truncate. There are two subgeneric groups as follows:

Mandibles tridentate externally; head moderately small, with a transverse, medially interrupted ridge; clypeus more or less narrow at apex; sterna punctate and pubescent; pronotum never indented. Group I

Mandibles bidentate at tip, more slender; head much larger, with two widely separated tubercles, the apex of the clypeus broadly truncate, the two teeth remotely separated; sterna glabrous and almost impunctate; pronotum with a minute apical tubercle in front of a small oval indentation. . . . . Group II

I am not at all certain that some of the general characters stated above, particularly those relating to the spiracles and stridulating organs of the typical *Ligyrodes relictus* type, apply to the large tropical forms placed in the second group, my material being too scanty for investigation:

Group I.

Subgenus **Ligyrodes** in sp.

This subgenus is represented by a moderate number of species, some of which are abundant individually in the subarctic parts of North America, excepting the Pacific regions, and extending southward along the interior table lands to or beyond the City of Mexico. It is therefore essentially a subarctic group and is much more circumscribed in habitat than *Ligyrus*, or even *Euetheola*. The apex of the post-coxal prosternal process has a flattened and explanate, densely ciliate part and a bulbous nude anterior part, a formation frequently observable in the Cyclocephalini. The various taxonomic forms are rather well differentiated and most of those announced below are probably true species, though some may ultimately find a place as subspecies:

Apical angles of the clypeus rounded.....2
Apical angles more than right but very distinct, not rounded.....9
2—Clypeal teeth approximate.....3
Clypeal teeth rather widely separated.....8
3—Teeth of the clypeal apex extremely approximate and in the form of low rounded ridges. Body shorter and less convex than in *relictus*, shining, black, with a feeble piceous tinge above, the under surface and legs castaneo-rufous; head slightly more than two-fifths as wide as the prothorax, shallowly and coarsely scabrous, the medially interrupted transverse ridge acutely elevated, extending to the sides, its anterior slope with small discrete punctures; clypeus gradually strongly upturned apically, trapezoidal, its finely elevated side margins higher basally; mentum finely scabriculate throughout; prothorax one-half wider than long, convex, the sides parallel, becoming rounded and convergent in rather less than apical half, the basal angles broadly rounded; base margined at the sides; punctures sparse but rather strong throughout, not differing at all laterad; scutellum ogival, with a few discal punctures in two clusters; elytra but very little longer than wide, rather conspicuously inflated in about posterior two-thirds, circularly rounded in apical two-fifths, fully a fifth wider than the prothorax, the punctures sparse, rather coarse but shallow, annulate, those in the four sets of geminate striæ more close-set, these striæ evidently impressed, elsewhere confused, mingled with very fine sparse punctules, especially toward the sides; pygidium convex, finely scabriculate, becoming smooth and sparsely, rather strongly punctate medially except toward base; larger claw of the anterior male tarsi not long, stout, bent medially at more than a right angle, the external outline evenly arcuate to the apex, which is on the straight inner margin but not at all produced, the claw-joint scarcely one-half longer than the fourth; anterior tibiæ with a rudimentary fourth tooth. Length (♂) 19.0 mm.; width 10.6 mm. New Jersey.....**clypealis** n. sp.
Teeth of the clypeal apex clearly separated and acutely triangular....4
4—Head very small, scarcely more than a third as wide as the prothorax. Body elongate, parallel and subcylindric, not wider posteriorly, deep polished black, the under surface and legs blackish-piceous; head scabriculate, smooth and impunctate basally, the clypeus trapezoidal, concave, with coarse isolated rugulosity, finely and closely punctate on the anterior slope of the transverse ridges, which are strong and subtuberculiform internally, gradually evanescent externally; sides feebly sinuate except basally; apex strongly reflexed, the teeth high, large and well developed; prothorax fully two-thirds wider than long, the sides evenly and strongly arcuate throughout, gradually converging apically, the basal angles more than right but not very broadly rounded; base beaded only about the hind angles; lateral bead thick, the inner gutter scabriculate; punctures as in the preceding but still stronger; scutellum moderate, with only two or three punctures; elytra long, nearly a third longer than wide, two and one-half times as long as the prothorax and not wider, parallel, circularly rounded in apical two-fifths; sculpture nearly as in the

preceding, the geminate series less impressed and less closely punctate, the punctures all very shallow and annular; pygidium very convex, nearly as in *clypealis;* anterior tibiæ with the fourth tooth very obtuse and feeble but sharply defined by a very small deep notch; larger claw of the male with the apex produced in a short but slender aciculate styliform process, in extension of the straight inner margin, the outer margin broadly arcuate and gradually converging to the base of the stylet. Length (♂) 18.0 mm.; width 9.4 mm. Iowa (Keokuk).....**parviceps** n. sp.

Head much less small in size and only slightly more or less than two-fifths as wide as the prothorax.....5

5—Elytra short, barely at all longer than wide.....6

Elytra distinctly elongate, not differing much sexually.....7

6—Body short, oblong, broader than in the preceding and only barely visibly inflated posteriorly, black to paler, shining; under surface castaneous, the legs blackish-piceous; head barely two-fifths as wide as the prothorax, in form and sculpture nearly as in *relictus* Say, the two transverse prominences sloping almost similarly to the rather shorter and more concave clypeus, the oblique sides of which are more sinuate, the apex rather more obtuse, the teeth erect and triangular but often worn down and broadly obtuse; prothorax three-fifths wider than long, the sides broadly rounded, strongly converging apically, becoming parallel basally; lateral bead rather thin; punctures sparse, very much as in the preceding; scutellum with minute scattered punctures centrally; elytra barely sensibly longer than wide, a fifth or sixth wider than the prothorax, broadly rounded in about apical third; punctures sparse, shallow and annular, arranged as in the preceding species; pygidium densely scabriculate, becoming polished and with discrete, well separated but unevenly distributed punctures in nearly median third; fourth tooth of the anterior tibiæ obtusely rounded but distinct, the larger claw of the male as in *relictus.* Length (♂ ♀) 18.4–19.0 mm.; width 10.4–11.0 mm. Texas, Louisiana and Illinois.....**quadripennis** n. sp.

7—Form subcylindric-oval, convex, rather stout, deep black and polished, the under surface and legs rather dark castaneous; head barely two-fifths as wide as the prothorax, closely, rather sharply rugulose, smooth at base, the transverse interrupted ridge low but attaining the sides, the anterior slopes finely and clearly punctate; trapezoidal clypeus with the sides feebly sinuate, the apical teeth acute and sharply upturned; last antennal joint (♂) three-fourths as long as the stem; mentum smooth and polished anteriorly; prothorax slightly more than one-half wider than long, in form nearly as in the preceding species, the sparse punctures distinct, moderately coarse; scutellum ogival, wider than long, with a few distinct scattered punctures; elytra a fourth or fifth longer than wide, barely at all wider than the prothorax in either sex and only very feebly inflated posteriorly, broadly rounded at apex; sculpture as in the preceding species; pygidium (♂) nearly as in *quadripennis;* in the female it is similar and equally convex but becomes scabriculate only nearer the sides and there more coarsely and less densely;

fourth anterior tibial tooth small and obtuse but obvious in both sexes, the larger claw of the male as in the preceding species, the apical stylet generally longer, more abruptly formed and conspicuous. Length (♂ ♀) 16.0–22.0 mm.; width 8.7–12.2 mm. Rhode Island to Iowa. Common. Thirty-six examples. [*Scarabæus relictus* Say]. **relictus** Say

A—Form nearly as in *relictus* but more elongate; head larger, the eyes distinctly larger and more prominent, separated by less than three times their width, while in the female of *relictus* the eyes are separated by more than three and one-half times their width; prothorax somewhat similar in form but less narrowed apically and differing in the very minute punctures, remotely scattered over the more highly polished surface; elytra slightly more elongate but otherwise nearly similar throughout; pygidium nearly similar but with the rugulosity deeper and more punctiform; hind tibiæ rather less broad. Length (♀) 22.7 mm.; width 11.6 mm. Iowa (Keokuk). A single example..... **vernicicollis** n. subsp.

Form narrower, more elongate, subcylindric-oval, convex, polished, piceous-black, the under surface and legs rather bright brownish-rufous; head similar but not quite so large and with the diffuse wavy rugulosity feebler, the basal regions similarly smooth; segments of the interrupted ridge decidedly tuberculiform internally, gradually diminishing externally and not quite attaining the sides; punctures of their anterior slopes excessively minute and sparse; concave clypeus trapezoidal, with the sides unusually sinuate, the apical teeth acute but small and only moderately upturned, rather less approximate than in *relictus* but much closer than in *sallei;* prothorax three-fifths wider than long, the sides moderately converging and distinctly arcuate from the broadly rounded basal angles to the apex; punctures as in *relictus;* scutellum not so large or broad, smooth, with fine punctulation only at base; elytra nearly a fourth longer than wide, not distinctly (♂) or nearly a fourth (♀) wider than the prothorax, slightly inflated apically in the female, broadly rounded at apex; punctures not close, arranged as in the preceding species, each of the rather large impressed punctures inclosing an annulus; geminate series much less definite than in *relictus;* pygidium differing greatly in sculpture, polished, sparsely and strongly punctured throughout, the apical region in both sexes, but especially the female, becoming more finely and very remotely punctulate; fourth tibial tooth very small, feeble and indistinct; larger claw of the male with the apex arcuato-truncate, the minute stylet projecting from its lower limit and in prolongation of the lower margin. Length (♂ ♀) 17.0 mm.; width 9.2–9.75 mm. Mexico (San Angel, near the city), —Wickham..... ***propinquus** n. sp.

8—Form, lustre and coloration throughout as in the preceding but of larger size; head nearly similar but with the median transversely oval concavity of the front deeper and more distinct and with the clypeal teeth separated by two-thirds the distance separating the crests of the frontal elevations, whereas in *propinquus* this proportion is barely more than one-half; prothorax similar but rather less ab-

breviated, only a little more than one-half wider than long, the basal angles still more broadly rounded, the punctures even sparser, similarly irregular in distribution as is usual; scutellum similar; elytra also similar in form and proportion in both sexes, but with the sparse annular punctures deeper and more perforate and therefore apparently finer, more close-set in the better defined series forming the feeble costules; pygidium similar but more scabriculate along the basal margin in the male but not in the female; anterior tibiæ with the fourth tooth distinct though small and similarly with an evident tooth-like prominence between the second and third teeth, which is wanting in *relictus* and others of that type. Length (♂ ♀) 19.8–20.0 mm.; width 10.6–11.3 mm. Mexico (near the city). [*Ligyrus sallæi* Bates] ..... ***salléi** Bates

9—Body narrower, elongate-oval, strongly convex, shining, blackish-piceous, the elytra, under surface and legs castaneo-rufous, head distinctly more than two-fifths as wide as the prothorax, the eyes relatively much larger and more prominent than in *salléi*, separated by but little more than twice their width; front with confused arcuate rugulosity, the basal regions smooth; divided ridge forming two obtuse transverse tubercles, the outer slopes of which do not attain the sides; trapezoidal clypeus with the sides distinctly sinuate apically and with concave, very feebly and loosely rugulose surface, the apical teeth nearly as well separated as in *salléi*, the distance of each from the lateral angle half their distance asunder; prothorax longer than in any other species, distinctly less than one-half wider than long, the sides converging and evenly arcuate from the rather distinct and only moderately rounded basal angles to the apex; sculpture as in all the other species; scutellum ogival, rather broad, minutely, sparsely punctulate in about basal half; elytra about a fourth longer than wide, feebly inflated posteriorly and a fifth or sixth wider than the prothorax, circularly rounded in apical two-fifths; sculpture as usual, but the annular punctures are smaller, feebler and much sparser than in any other, the geminate series fine, barely at all impressed and with the punctures well separated; pygidium very convex, with strong sparse punctures in about basal half, the nearly apical half being perfectly smooth; tibiæ almost as in *salléi*, the larger claw of the male not so truncate at tip but obtusely rounded, symmetrically so with regard to the longitudinal axis, the slender aciculate ramus projecting beyond the tip, in prolongation of the lower margin; apex of the fourth joint prolonged briefly and very obtusely over the basal part of the fifth and with its surface closely strigilate, a character also observable in *salléi* and *propinquus*, as well as *relictus* and others of that section. Length (♂) 18.2 mm.; width 9.2 mm. Mexico (Cuernavaca, Morelos),—Wickham ..... ***aztecus** n. sp.

The species *salléi*, *propinquus* and *aztecus* are closely allied among themselves, but the first may be known by the rather larger size and more separated clypeal teeth, and *aztecus* by its narrower,

more oval form, larger and more prominent eyes and less transverse prothorax. There does not appear to be much doubt concerning the status of our more northern species as defined in the table.

Group II.

Subgenus **Euligyrus** nov.

The species of this division have a distinctly different habitus from those of the preceding subgenus, due to their more oval and rather less convex form, notably large head, with widely separated clypeal teeth, purely tridentate anterior tibiæ, presence of an anterior fovea and tubercle on the pronotum and finer elytral sculpture; when, in addition, we consider the bidentate mandibles, which however reappear in *Euetheola* and the subgenus *Eugrylius* of *Ligyrus*, the taxonomic isolation of *Euligyrus* becomes still more evident. The mentum is smooth, feebly convex, rather broadly truncate at tip and has, along each side, a series of very stiff erect setæ. The under surface is completely glabrous and the metasternum has only a few widely dispersed punctures toward the sides, becoming closer anteriorly. One of the most radical peculiarities of the subgenus is, however, the structure of the met-episterna, almost the entire inner half being very smooth, sculptureless and more internally sloping, a character not even suggested in *Ligyrodes*. The apex of the post-coxal prosternal process is large, nearly flat and glabrous, divided, as in *Ligyrodes*, into a posterior cilia-bearing part and a larger, convex, nude anterior part. The type species is the following:

Form broadly oval, shining black, the elytra, under surface and legs with more or less evident piceous tinge, glabrous throughout, excepting the rows of setæ on the abdomen and legs; head half as wide as the prothorax, with fine separated wavy rugulosity, smooth at base, the front concave medially, the transversely placed tubercles widely separated, each gradually sloping externally; clypeus trapezoidal, with straight and finely, evenly elevated sides, the apex truncate, with rather rounded angles, each bearing an obtuse erect tooth, and about half as wide as the base; eyes moderate, not prominent; prothorax barely more than one-half wider than long, the sides evenly but moderately converging and evenly, rather strongly arcuate from the well rounded basal angles to the apex and rather finely margined; base broadly sinuate at each side, immarginate throughout; surface convex, more declivous laterally, sparsely, very minutely punctate, less minutely toward the sides; scutellum moderate,

relatively smaller than in *relictus*, smooth; elytra a fifth longer than wide, barely wider than the prothorax, subevenly rounded in not quite apical half, the surface sloping rapidly from the sutural region and nearly flat almost to the sides; punctures small, evenly distributed, rather sparse, confused except in the three discal and one finer lateral double series, which are completely unimpressed; all the punctures consisting of a small indentation, having at the bottom an extremely minute annulus; pygidium with rather small sparse shallow variolate punctures, becoming obsolete apically; larger claw of the anterior male tarsi deeply split at apex, the inner ramus long, gradually acute and in prolongation of the inner margin, the outer lobe shorter and broader, very acute at apex but not so finely aciculate as the inner. Length (♂) 23.5–25.0 mm.; width 11.6–13.2 mm. Brazil (Para),—Baker. Three examples. [*Scarabæus ebenus* DeG., *cordatus* Fabr.; *Cyclocephala scarabæina* Perty]..... ***ebenus** DeG.

The female does not differ from the male in any respect, even in the pygidium, which is merely less convex and feebly impressed beneath near each side, and the elytra are rather more evenly convex and with less of the singular biplanate slope of the male, the anterior tarsi slender and unmodified as usual. The inferior striated lobe of the fourth male anterior tarsal joint is but little longer than in the *relictus* or *sallei* types, but is more obliquely pointed.

Euetheola Bates.

The few species of this genus have the same glabrous under surface as in *Ligyrodes*, but to show how distinct genera, and this is undoubtedly of that class, may resemble each other in certain apparently peculiar features, it should be said that the characteristic formation of the anterior margin of the clypeus—transverse but posteriorly sinuated at the middle by the interval between the rather approximate teeth,—is almost completely similar to the form seen in *Ligyrodes aztecus*, described above. The erect postcoxal process of the prosternum is as in *Ligyrodes* and *Euligyrus*, except that the glabrous part is nearly flat and occupies the entire surface, the fringe of cilia radiating from its hind margin. The sides of the mentum are irregularly and closely setose as in *Ligyrodes* but not in *Euligyrus*. The mandibles are rather slender and very unequally bidentate, and the anterior tarsi are unmodified sexually as in *Ligyrus*. The body is much smaller in size than in *Ligyrodes* and is more oblong than in *Ligyrus*, and, as before stated, has no well developed stridulating area on the inner surface of the

elytra. The anterior tibiæ are as in *Ligyrodes*, generally having an obtuse fourth tooth and sometimes a slight prominence between the second and third teeth. Three species may be described as follows:

Second and third alternate intervals of the elytra confusedly punctate like the others.....2

Second and third alternate intervals with a more or less distinct single row of coarse punctures.....3

2—Body oblong, stout, evenly and strongly convex, not very shining, deep black, the under surface and legs barely picescent; head a little less than half as wide as the prothorax, with dense and transversely intricate rugulosity, the base smooth but with sparse punctures; eyes small, not prominent; transverse ridge rather fine, broadly divided, not attaining the sides; clypeus short, the very oblique sides more strongly margined basally, the apex transverse, much less than half as wide as the base, with the obtuse angles scarcely at all rounded and evident, the teeth short, obtuse, thin, the separating sinus oblique in plane; prothorax scarcely one-half wider than long, the sides broadly arcuate, narrowed but little anteriorly; basal angles rounded, the side margins finely beaded; base transverse, unmargined, feebly bisinuate; punctures sparse but strong throughout, rather less sparse but scarcely differing otherwise laterad; scutellum rather small, ogival, with a few minute punctures; elytra scarcely longer, or not at all longer, than wide, two-thirds longer than the prothorax and not evidently wider, very obtusely rounded at apex; punctures relatively rather coarse, close-set and everywhere confused, except in the coarse though scarcely impressed double series, where they are very close-set; they are very shallow and annular throughout, except toward the sides and apex in apical half, where they become very fine and confused; pygidium finely, densely punctato-scabriculate, except medially, where it becomes sparsely punctate, a little shorter, more convex and more broadly rounded at apex in the male but not differing otherwise sexually; tarsi slender, short, the posterior much shorter than the tibiæ; last ventral with a broad smooth apical margin in both sexes. Length (♂ ♀) 13.7–14.2 mm.; width 7.5–7.8 mm. Georgia to Texas. Said to infest Indian corn. [*Ligyrus rugiceps* Lec.].....**rugiceps** Lec.

Body smaller and less stout, much more shining, deep black; head similar throughout; prothorax similar but a little shorter, the sides becoming rather less parallel basally, the punctures very remotely scattered and minute medially, less sparse and much more distinct toward the sides; scutellum smooth and punctureless; elytra but little longer than wide, barely wider than the prothorax and more than three-fourths longer, circularly rounded in fully apical two-fifths; punctures disposed as in *rugiceps* but everywhere very much smaller and rather sparser; pygidium finely scabriculate only along the basal margin, thence sparsely and not coarsely punctured to about the middle, becoming densely and confluently so at the extreme sides,

elsewhere smooth and punctureless; slender hind tarsi much shorter than the tibiæ. Length (♀) 12.6 mm.; width 6.3 mm. Honduras (San Pedro Sula).....*hondurana n. sp.

3—Form slightly more elongate than in *rugiceps* but otherwise nearly similar in size and outline; head coarsely rugose, the clypeus reflexed at apex and with two broad teeth; frontal carina feeble, interrupted at the middle; prothorax almost punctureless medially, the punctures more evident at the sides and especially toward the apical angles; elytral striæ geminate-punctate, the intervals between the geminate rows extremely finely and sparsely punctate, the subsutural or first alternate interval coarsely and confusedly punctate, the second and third alternate intervals coarsely punctate in more or less distinct single series, especially in basal half; pygidium rugosely punctured near the base, more sparsely toward apex; anterior tibiæ tridentate, without incisure above the upper tooth; tarsal claws simple in both sexes. Length 15 mm. Arizona (Nogales). [*Ligyrus subglaber* Schf.].....**subglabra** Schf.

As tending to show the comparative unimportance of what, in some parts of the Coleoptera, would be rather radical taxonomic mandibular characters, it should be said that in *rugiceps* the rather slender, apically upturned mandible is simply prominently and obtusely swollen, punctured and setose externally, this prominence representing a second tooth, while in *hondurana*, there are two large subequal teeth, separated by a small deep notch, the apical tooth obtusely acuminate and upturned. *Hondurana* is apparently larger than the South American *Heteronychus humilis* of Burmeister and with much less inflated elytra, the latter having a radically different system of punctuation; in *hondurana* the punctures are all minute, annular and abruptly limited, while in *humilis* they are comparatively coarse, each having at the bottom a minute annulus and with fine interspersed punctures much more evident. The side margins are also said to be distinctly and simply punctate, while in *hondurana* there is no such appearance.

Ligyrus Burm.

This is a large genus, inhabiting all parts of North and South America, excepting the subarctic Pacific regions of the continent. The species often occur in great abundance and some of them are probably important from an economic standpoint. The body varies in form according to the group to which it is assignable. There are a number of these subgeneric groups and the four represented by material in my collection may be defined as follows:

Mandibles bidentate at tip; front bituberculate; ligula rather broad, truncate; post-coxal process of the prosternum with its apex large, flattened, having an anterior convex nude, and a posterior explanate ciliate, portion; sterna glabrous; pronotum with an anterior indentation and small tubercle; body large in size.....Group I

Mandibles tridentate externally; front transversely carinate at the base of the clypeus; ligula narrower, generally bluntly acuminate; post-coxal process smaller, not flattened at tip and bristling throughout with long setæ; sterna more or less conspicuously pubescent; body moderate or small in size.....2

2—Pronotum with a small anterior indentation and feeble subapical tubercle.....3

Pronotum without trace of the anterior indentation, the tubercle obsolete.....4

3—Clypeal teeth small, approximate; body generally short and ovoidal, the head small; maxillary galea tridentate.....Group II

Clypeal teeth widely separated; body elongate-oval, the head rather large; maxillary galea bidentate.....Group III

4—Body nearly as in Group II and similarly with the head notably small. Group IV

Groups I, III and IV are wholly tropical, while Group II, the true *Ligyrus*, is distributed from Canada to and throughout the Sonoran regions of Mexico.

Group I.

Subgenus **Grylius** nov.

There are so many and such weighty differences between this group and the last three defined above, that there is more probability of true generic value than the status here suggested for it. The body is of large to moderately large size and the species are comparatively few in number; those in my collection may be defined as follows:

Elytral sculpture becoming completely effaced broadly toward the suture. Body stout, convex, shining, oblong-suboval, piceo-rufous in color above, still paler bright brownish-red beneath, glabrous throughout; head moderate, barely two-fifths as wide as the prothorax, rugulose, smooth at base, the eyes very moderate, not at all prominent, the front impressed medially; tubercles separated by a little less than half the distance between the eyes, and at the extreme base of the clypeus as usual; suture transverse, fine but traceable throughout; clypeus trapezoidal, less than twice as wide as long, the sides very feebly sinuate, finely and evenly margined, the upturned teeth very approximate; mentum on the disk flat, smooth and nude, excavated at the base; prothorax one-half wider than long, the sides moderately convergent, very evenly and rather strongly arcuate from the rounded

basal angles to the apex; base unmargined, feebly arcuate, very slightly sinuate at each side, the lateral margins not thick; punctures obliterated medially, becoming rather distinct near the sides and, near the apical angles, very coarse, shallow, confluent and rugose; anterior pit rugose; scutellum ogival, smooth, with a fine line of irregular punctures parallel to the external edges; elytra nearly a fourth longer than wide, not evidently wider than the prothorax and not quite twice as long, circularly rounded in about apical two-fifths; sides very feebly sinuate between the humeri and the middle; punctures coarse but not very close-set, impressed, each enclosing a smaller annulus, in great part serial when present, but wanting almost throughout basally, in inner third thence to the apex and in outer fourth throughout, this latter region smooth and polished like the sutural but with very minute sparse punctulation; pygidium densely scabriculate at base and broadly toward the lateral ends, sparsely and moderately punctate broadly at the middle and apex; anterior tibiæ with a broad fourth tooth and a similarly broad tooth between the second and third; last abdominal segment with coarse deep close-set punctures throughout; hind tarsi much shorter than the tibiæ, much more slender than in *gyas* Er. Length (♀) 23.0–23.5 mm.; width 11.9–12.4 mm. Lower California (San José del Cabo). [*Ligyrus bryanti* Riv.].....**bryanti** Rivers

Elytral sculpture indicating no change in character toward the suture, the punctures becoming smaller and more confused postero-externally, however, as usual throughout the genus.....2

2—Body somewhat as in the preceding in outline and habitus, but a little smaller and black, with but feeble piceous tinge, very shining, bright castaneous beneath, the legs concolorous; head slightly larger and with rather more convex eyes, similarly sculptured, the large frontal impression shallower and more diffuse; tubercles and clypeus nearly similar; mentum more convex, more setose basally; prothorax similar in general dimensions, but with the sides converging from base to apex less arcuate, the rugose anterior pit larger, more semicircular; sparse punctures fine but distinct medially, very distinct but barely closer toward the sides, close-set but not at all confluent toward the apical angles; scutellum with the fine subpunctulate line at a greater distance from the edges; elytra similar in form and relative size but strongly and deeply punctured, the punctures widely separated, impressed, each enclosing a small annulus, rather close-set in the geminate series, confused broadly elsewhere; pygidium as in the preceding but more convex, the large smooth medial region with remote and very minute punctures; anterior tibiæ with the fourth tooth broader and still feebler, the one between the second and third teeth obsolete; last abdominal segment (♂) smooth, impunctate, the apical sinus distinct. Length (♂) 21.5 mm.; width 11.2 mm. A single example, said to have been found in Florida but more probably Mexican.....**lævicollis** Bates

Body much broader and rather less convex, oblong-oval, rather inflated behind, black, shining, the elytra with very faint piceous tinge, the under surface and legs bright brownish-red; head two-fifths as wide

as the prothorax, throughout as in *lævicollis* except that the front is not impressed and the clypeal apex somewhat more broadly rounded, though the small acute upturned teeth are barely less approximate; prothorax more transverse, three-fifths wider than long, the evenly and rather strongly arcuate sides more converging from the more broadly rounded basal angles to the apex; punctures not coarse but strong and distinct, sparse, becoming closer and stronger laterad; anterior pit very small and feeble, rugulose, the tubercle small and inconspicuous; scutellum with a few minute sparse punctures; elytra but very slightly longer than wide, at or behind the middle distinctly wider than the prothorax, rounded at apex; punctures coarse, deeply impressed, rather close-set, each having a minute annulus at the bottom, equally but confusedly arranged throughout, excepting in the geminate series, which are more oblique than in the preceding species and having the punctures close-set; punctures postero-laterad finer and sparser, the sublateral geminate series finer and feebler; pygidium sparsely, rather finely punctate, rugulose at the extreme ends; mes-episterna pubescent, the met-episterna glabrous as usual; in *lævicollis* this episternal distinction is not so marked. Length (♀) 23.5–24.3 mm.; width 12.8–13.2 mm. Brazil (Amazons). [*Tomarus gyas* Er.] ..... ***gyas** Er.

Mr. Schaeffer (Bull. Bk. Inst., I, p. 384) goes into some details to prove the identity of *bryanti* Rivers, with *lævicollis* Bates, in which comparisons the anterior tibiæ figure to a great extent. The tibial characters are, however, of much less moment than some other more general features, which, in the comparison, lead me to believe that *bryanti* and *lævicollis* are by no means exactly the same. We may begin, for instance, with the size; *lævicollis* is smaller, 18–22 mm. in length; then the color, the latter species is described as black, while the normal color of *bryanti* is piceo-rufous; again we may dwell upon some negative evidence, for, if the flanks of the elytra postero-laterad were so completely smooth and polished as they are in *bryanti*, it would seem almost certain that some allusion to so striking a character would have been made by the describer. Finally, we must take into consideration the question of faunistic peculiarities; the tip of Lower California has a decidedly isolated fauna, some elements of which extend to the northward along the Gulf of California, but there are only very few which occur also in the region near Mazatlan, Mexico, or to the southward thereof. Now the localities for *lævicollis* are said to be various places in Guerrero, Chiapas and British Honduras, and I have but little doubt that the series that Mr. Bates had before him, itself included several distinct species or subspecies, especially when we read in

regard to elytral sculpture: "striis geminatis utrinque tribus, interstitio lato subsuturali *plerumque* lævi," the significant word being italicized. I am unable to define *latifovea*, which also belongs to this subgenus, not having seen authentic examples, but the species described above under the name *lævicollis*, is probably a fairly typical representative; it differs from *gyas*, besides form and sculpture, in having the hind tarsi shorter and much more slender.

Group II.

Subgenus **Ligyrus** in sp.

This subgenus is widely diffused but apparently does not occur in South America, being replaced there by Group IV, as defined above, which group, however, also extends to the northward into Central America. The species are numerous, and when viewed in series do not seem to be especially closely allied among themselves; but they display rather few structural differences in special organs or parts and are therefore difficult to classify in such manner as to be recognizable very readily from description; I have therefore adopted a geographic division as a primary character as follows:

Species of the Atlantic regions. 2
Species of the Sonoran regions; body short in build and inflated behind to greater or less degree. 13
2—Basal joint of the hind tarsi large and triangular. 3
Basal joint slender basally, more abruptly enlarged apically; body shorter in form, almost always inflated behind. 4
3—Form elongate-oval, convex, not posteriorly inflated, polished, black, the elytra and sides of the pronotum somewhat picescent, the under surface and legs blackish-piceous; head rather more than two-fifths as wide as the prothorax, finely rugose, the clypeus more coarsely and feebly, the base smooth; front longitudinally impressed along the middle, the transverse ridge entire, not quite attaining the sides; clypeal teeth small, sharp and approximate; prothorax barely one-half wider than long, the sides from above converging and nearly straight almost to apical third, then more convergent and nearly straight to the apex; basal angles narrowly rounded; punctures fine, rather deep, everywhere very sparse; concavity smooth, the tubercle rather strong; apical coriaceous margin well produced medially; scutellum much wider than long, smooth, ogival; elytra fully a fourth longer than wide, not evidently wider than the prothorax, circularly rounded in about apical two-fifths; punctures rather coarse and impressed, notably sparse throughout and rather widely spaced even in the geminate series, few in number on the subsutural interval, each enclosing a small annulus as usual; punctures smaller and

broadly confused postero-laterad; pygidium finely, feebly scabriculate near the base throughout the width, elsewhere very feebly and remotely, indistinctly punctulate; hind tibiæ notably stout, but little more than twice as long as the rapidly expanded apex; hind tarsi stout, a little shorter than the tibiæ. Length (♂) 15.0 mm.; width 7.9 mm. New York (Willets Point, Long Island).

longulus n. sp.

Form oblong, narrower and more parallel, barely visibly dilated behind; color very pale ochreo-ferruginous throughout, shining, the head and median part of the pronotum anteriorly blackish; head more than two-fifths as wide as the prothorax, rather finely and not densely rugose, smooth at base, not medially impressed, the transverse ridge even, not attaining the margin; clypeal teeth small, the mandibular acute, triangular; prothorax short, nearly three-fourths wider than long, the sides parallel, arcuately converging in less than apical half, the basal angles narrowly rounded—viewed dorsally; punctures sparse, rather large but shallow, toward the sides not larger but rather smaller and sparser; base broadly, feebly lobed; impression well developed, deep, smooth, sparsely punctate, the tubercle broadly triangular: scutellum smooth; elytra about a sixth longer than wide, much more than twice as long as the prothorax and but very little wider, broadly rounded at apex, having the series as usual but unimpressed and with small, feeble and widely spaced punctures, the intervals almost impunctate, the subsutural sparsely toward base; punctures laterally fine and sparse; pygidium finely and remotely punctulate, feebly and finely rugulose at the sides; abdomen asperately punctate laterally, smooth medially, the last ventral of the male evidently sinuate medially; sternal pubescence not dense but long and tawny-yellow; hind tibiæ stout, obconic, the anterior purely tridentate as usual. Length (♂) 12.8 mm.; width 7.3 mm. Virginia (Fort Monroe).....**virginicus** n. sp.

4—Body of peculiarly parallel outline, the elytra only very feebly inflated just behind the middle. Shining, dark castaneous in color, the under surface and legs paler rufous; head rather small, not coarsely, closely rugose, smooth at base, the carina sharp, even, not depressed medially and widely separated from the sides; clypeal teeth of the usual form, acute; prothorax slightly more than one-half wider than long, the sides between the very broadly rounded basal angles and the antemedian arcuation very feebly converging and slightly sinuate, strongly converging apically; base broadly lobed; punctures moderately sparse, coarse, wanting along the middle basally and less coarse and rather sparser laterally; anterior pit moderate, smooth, sparsely punctate, the tubercle rather strongly elevated; scutellum smooth, with very few fine punctures; elytra about as wide as the prothorax and not quite twice as long, evidently longer than wide, very obtusely rounded at apex, the series oblique and regular as usual, rather broadly impressed and with coarse annulate punctures, smaller and deeper in the sutural series, smaller but still rather coarse and confused postero-laterad, coarse and scattered over the sub-

sutural interval; pygidium with small but distinct and not very sparse punctures throughout, subrugulose at the sides, in large part covered by the elytra in the male; abdomen scarcely punctate laterally except in the usual close-set series of very fine punctures; postcoxal plate smooth and polished, sparsely punctate basally and minutely, densely so at apex. Length (♂) 12.7–13.2 mm.; width 7.0–7.7 mm. Texas (Waco).....**parallelus** n. sp.

Body oblong-oval, more inflated behind and of stouter build.....5

5—Hind tibiæ short, obconic, not very deeply sinuate externally near the apex and only moderately expanded at the apex. Body rather small in size, polished, dark piceo-castaneous in color above, the under surface pale yellowish-ferruginous; pronotum rather paler at the sides; head fully two-fifths as wide as the prothorax, blackish, the clypeus bright rufous; front finely rugulose, feebly impressed along the middle, the base smooth; carina finely acute along the summit, which is feebly sinuate at the middle, not attaining the sides; clypeus polished and with minute sparse asperities, the teeth small, slender and spinuliform; prothorax short, two-thirds to three-fourths wider than long, in outline nearly as in the preceding, except that the basal angles are only narrowly rounded—viewed dorsally; surface very smooth and polished and with minute shallow punctures, very remotely scattered, the pit well developed, smooth, gradually shallowing laterally, steeper posteriorly, the tubercle rather strong and acute; scutellum very smooth; elytra slightly elongate, more than twice as long as the prothorax and, posteriad, distinctly wider, the lines rather coarsely but moderately impressed, with the punctures well spaced, coarsely impressed, each with an elliptic annulus, the subsutural interval with rather few punctures; pygidium polished and remotely, obsoletely punctulate, punctured laterally and basally (♀), or with fine rugulosity toward the sides (♂): hind tibiæ but little more than twice as long as their apical width; hind coxal plate finely but not densely punctate apically. Length (♂♀) 12.8–13.2 mm.; width 7.3–7.8 mm. New Jersey (Atlantic City). Not common.....**remotus** n. sp.

Hind tibiæ longer, relatively more slender, more deeply sinuate externally near the apex, which is more abruptly and strongly expanded....6

6—Prothorax larger, only moderately transverse, three-fifths to two-thirds wider than long. Body stout, convex, shining, black when mature, the under surface and legs castaneo-rufous; head barely more than a third as wide as the prothorax, with fine, sparse rugulosity, the base smooth and polished, the carina as in the preceding but with the median sinus nearly obsolete; clypeus rufescent, finely, loosely asperulate, with the minute asperities becoming very dense apically to the base of the teeth, which are strongly elevated, very acute and less approximate than in many others; prothorax subparallel, with the sides nearly straight—viewed dorsally—from the broadly rounded basal angles nearly to apical third, where they become strongly oblique to the apex; annular umbilicate punctures moderately sparse, lying within rather coarse impressions, smaller near the sides; pit well developed, smooth, the tubercle strong, broadly

triangular; scutellum with a central fovea and some small scattered punctures; elytra barely twice as long as the prothorax and but little wider, distinctly swollen at the sides behind the middle, only very little longer than wide and subcircularly rounded in apical two-fifths; punctures moderately coarse, rather close-set and confused subsuturally and broadly toward the sides, the sutural and submedial series only feebly impressed and with moderately close-set punctures; pygidium with rather sparse but strong punctures, becoming still sparser but only a little smaller apically; legs rather stout. Length (♂ ♀) 13.0–16.0; width 7.2–9.4 mm. Texas (Dallas and Lee Co.). Twenty-three examples..... **texanus** n. sp.

Prothorax more transverse, sometimes almost twice as wide as long..7

7—Color black to obscure castaneous.....8

Color bright rufous.....10

8—Pronotal punctures rather coarse and more or less close-set, conspicuous. Body stout, convex, black to obscure ferruginous above, much paler brownish-red beneath; head more than a third as wide as the prothorax, closely rugulose, smooth at base and with some intermediate discrete punctures; carina even, sometimes feebly sinuate medially, not attaining the sides; clypeus finely, loosely rugulose, more closely anteriorly, the teeth rather small; prothorax subparallel, with the sides feebly arcuate in basal two-thirds, then broadly rounding and converging to the apex, the basal angles, from above, obtuse but only narrowly rounded; pit varying from very small and feeble to rather large, deep and partially rugulose, the tubercle transversely angulate; scutellum smooth or with a few punctures, sometimes having a central fovea; elytra a little longer than wide, more than twice as long as the prothorax and evidently wider, obtusely rounded at apex, the punctures decidedly coarse and deep, rather close-set in the more or less coarsely impressed oblique series, confused but even rather coarser laterad, though becoming finer on and near the apical declivity, rather few in number but coarse on the subsutural interval; pygidium with small and very sparse punctures, becoming less sparse and interningled with more or less fine rugulosity basally and laterally. Male shorter and relatively stouter than the female. Length (15 ♂, 12 ♀) 12.7–15.0 mm.; width 7.3–9.0 mm. New Jersey and North Carolina to Louisiana (Vowell's Mill), Iowa and Kansas (McPherson). [*Scarabæus gibbosus* DeG., *Geotrupes juvencus* Fabr., *Podalgus variolosus* Burm., and *Bothynus morio* Lec.] ..... **gibbosus** DeG.

A—Similar to *gibbosus* in nearly every way but a little less stout, and except that the thoracic punctures are more close-set and the pygidium (♂) shorter, rather broader, more convex, more broadly rounded at apex and having everywhere rather coarse, more or less close-set and conspicuous punctures; hind tibiæ much stouter. Length (♂) 13.8 mm.; width 8.0 mm. Mississippi (Vicksburg). **puncticauda** n. subsp.

Pronotal punctures small, much less conspicuous.....9

9—Body notably short and stout, rather dull in lustre, castaneous, the legs and under surface much paler, rufous; head small, with the usual

sculpture, the transverse carina even, not attaining the sides by a long distance and without trace of median sinus; oblique sides of the clypeus deeply sinuate, the teeth notably small, not very acute; prothorax nearly as in the preceding but with the punctures smaller and more unevenly distributed, becoming very sparse basally as a rule and remote toward the sides; anterior pit generally small and feeble, the tubercle obtuse; scutellum smooth, with a central fovea in all examples at hand; elytra short, barely at all longer than wide, rather more than twice as long as the prothorax, much more (♀) and nearly a fourth wider, broadly and obtusely rounded at apex; sculpture as in the preceding but everywhere less coarse and feebler; pygidium feebly and finely scabriculate, except in a large medial and apical region, where it becomes smooth and with small and very sparse punctures; hind tibiæ notably slender as in *gibbosus*. Length (2 ♂, 2 ♀) 12.8–13.4 mm.; width 7.7–8.5 mm. New Jersey.

breviusculus n. sp.

A—Similar to *breviusculus* in the fine sculpture but relatively more elongate, dull in lustre, castaneous above, not paler but more blackish beneath and throughout the legs; head still smaller, about a third as wide as the prothorax, similar, except that the clypeal teeth are larger; prothorax similar, but with the punctures everywhere sparser; scutellum without the central fovea in the type but with a conspicuous scabrous-punctulate line at some distance from the margins and parallel thereto, which is only very feebly and fragmentarily indicated in *breviusculus;* elytra longer, less inflated behind and less exceeding the prothorax in width, otherwise similar; pygidium distinctly differing, being much more extendedly and conspicuously scabriculate, the smoother medial part with the punctures stronger and irregularly more close-set; hind tibiæ nearly similar. Length (♂) 13.7 mm.; width 7.9 mm. Northern Illinois (Highland Park).....**lacustris** n. subsp.

Body very broadly and almost evenly oval, convex, not very shining, dark umber-brown above, obscure castaneous beneath; head but little more than a third as wide as the prothorax, nearly as in *gibbosus* but with the clypeal teeth relatively more separated, the ridge and teeth much worn down in the type; prothorax three-fourths wider than long, differing visibly from all the preceding species in having the sides strongly converging from base to apex and strongly, almost evenly arcuate; basal angles rather broadly rounded from above; base broadly but evidently lobed medially; punctures relatively small, moderately sparse, largely wanting medio-laterad and, toward the median line, becoming decidedly minute; anterior pit small and feeble, the tubercle obtuse; scutellum nearly smooth; elytra barely longer than wide, parallel, with evenly arcuate and not post-medially inflated sides, more than a fourth wider than the prothorax and slightly more than twice as long, broadly rounded at apex; punctures rather coarse, the series evidently impressed, with rather close-set punctures, the sculpture on the whole as in *gibbosus* but not quite so conspicuously coarse: pygidium much broader and relatively shorter, with the median line broadly and deeply impressed,

except toward base and apex, the surface throughout very finely, sparsely punctulate, more closely and unevenly at the lateral extremities; hind tibiæ nearly as in *gibbosus;* last abdominal segment of the female almost smooth, having only a few very fine, irregularly dispersed punctures. Length (♀) 14.3 mm.; width 8.4 mm. Northern Atlantic region.....**laticauda** n. sp.

10—Elytra (♂) very short, about as wide as long as a rule and unusually inflated behind. Body stout, shining, paler rufous beneath; head fully two-fifths as wide as the prothorax, finely, densely scabrous, smooth at base, the carina fine and acute, not at all sinuate medially, separated from the sides by a wide interval; clypeus finely, very densely scabriculate throughout, more sparsely in the female, the teeth small, slender; prothorax about three-fourths wider than long, the sides nearly straight and feebly converging to beyond the middle, there broadly rounded and thence strongly converging to the apex; basal angles moderately broadly rounded; punctures very moderate in size, shallow, abrupt, rather close-set anteriorly, gradually becoming very remote basally toward the sides; pit rather shallow, sparsely punctate, the tubercle obtusely and broadly triangular; scutellum generally with a central fovea; elytra posteriorly almost a third wider than the prothorax in the male, less in the rather more elongate elytra of the female, broadly rounded at apex; series rather sulciform; punctures somewhat coarse, toward the sides coarse, closer and confused except basally, becoming much finer apically and intermingled laterally with small sparse punctures; pygidium shining, the punctures small but distinct, not very sparse except medially toward tip, subrugulose at the sides; hind tibiæ rather slender; last ventral (♀) finely, rather closely punctulate, with a few fine punctures also at the middle of the penultimate segment. Length (3 ♂, 1 ♀) 12.6–15.0 mm.; width 7.7–9.2 mm. Texas (Austin), Iowa (Cherokee)—A. D. W. and Indiana.....**lætulus** n. sp.

Elytra oblong or oval, not much inflated behind, not greatly exceeding the prothorax in width and distinctly elongate.....11

11—Body oval in form, very convex, polished and strongly sculptured. Head nearly two-fifths as wide as the prothorax, strongly rugose, smooth and finely, sparsely punctate basally, the carina very fine along the crest, not sinuate medially and far removed from the sides; clypeus very short, concave longitudinally, feebly sculptured, the teeth small, acute and approximate; prothorax two-thirds wider than long, the sides converging from the broadly rounded basal angles to the apex but having, beyond the middle, a broadly arcuate point of flexure; punctures coarse, sparse, deeply impressed, smaller toward the sides; anterior pit deep and well developed, the tubercle strong, broadly triangular; scutellum smooth, with a few minute punctures; elytra but slightly longer than wide, parallel and broadly arcuate at the sides, obtusely rounded at apex, a sixth wider than the prothorax and more than twice as long, the punctures arranged as usual but not close-set, coarse, deeply impressed and very conspicuous, confused but rather coarse even on the apical declivity, each puncture enclosing a rather large annulus; pygidium polished,

minutely, very remotely punctulate, the punctures becoming dense at the extreme ends, the lower margins feebly sinuate; hind tibiæ very smooth, polished and punctureless, barely shorter than the femora; last ventral of the female impunctate. Length (♀) 14.0 mm.; width 8.0 mm. Florida (Jacksonville). [*Bothynus neglectus* Lec.]..... **neglectus** Lec.

Body oblong, stouter, much less conspicuously sculptured on either the elytra or pronotum..... 12

12—Sides of the prothorax converging and almost evenly arcuate from base to apex; body very stout. Color very pale brownish-rufous, but little paler beneath, shining, the sterna conspicuously pubescent; head rather more than two-fifths as wide as the prothorax, finely, very densely rugulose, smooth basally, the carina fine and sharp, feebly sinuate at the middle, joining a smooth plate at each side before the eyes; clypeus minutely, densely rugulose throughout, the sides at base rather prominent, the teeth unusually long, very acute, approximate; prothorax convex, two-thirds wider than long, the sides feebly converging at base from above, the punctures anteriorly not coarse but deep and close-set, becoming smaller and very remote toward the sides and base; pit rather large, smooth, the tubercle unusually prominent; scutellum with a confused line of feeble punctures parallel to the margins; elytra slightly longer than wide, only very little wider than the prothorax and slightly more than twice as long, broadly and circularly rounded in apical third, the sides before the middle feebly sinuate; punctures very moderate and widely spaced in unimpressed series, confused broadly toward the sides but smaller only apically; pygidium finely rugulose in about basal third from side to side, elsewhere polished and with distinct punctures, becoming gradually minute and remote apically; hind tibiæ rather strongly inflated apically, as long as the femora, closely punctulate externally; last ventral of the female finely punctulate, especially toward the middle. Length (♀) 15.5 mm.; width 9.5 mm. Kansas..... **bicorniculatus** n. sp.

Sides of the prothorax with the usual subprominent arcuation beyond the middle; hind tibiæ shorter than the femora. Color slightly deeper but clear rufous, paler beneath, the sternal pubescence similarly long and conspicuous; integuments shining; head similar, except that the transverse carina is feebler and shorter, not joining an ante-ocular smooth plate; clypeus, at the sides basally, less prominent, the subapical teeth not quite so high; prothorax nearly similar in size, proportion and sculpture; scutellum without a line of confused punctulation parallel to the sides, having merely a few fine scattered punctures and adventitiously a subcentral fovea; elytra rather smaller though of the same general form and proportion with regard to the prothorax, but much more coarsely and strongly sculptured, the punctures coarse and the series evidently impressed; pygidium similarly though more feebly micro-rugulose basally but with the scattered punctures finer; hind tibiæ nearly smooth. Length (♂) 15.0 mm.; width 8.8 mm. Colorado (Boulder Co.). One specimen..... **rubidus** n. sp.

A—Similar but a little narrower and more obscure rufous, the head nearly as in *rubidus* but the prothorax is relatively a little smaller, though similar in outline, and the punctures are everywhere stronger, becoming only slightly sparser basally, but not toward the sides, and with an impunctate median area basally, which is not at all defined in *rubidus;* scutellum similar; elytra also similar but with the punctures not so coarse, rather more numerous and less deeply impressed; pygidium less transverse and everywhere strongly and deeply punctate, except medially toward apex, where the punctures become fine and sparser; toward base the fine shallow rugulosity of *rubidus* is replaced by dense punctulation, similar to that pervading the rest of the disk and, on the median line above the centre, there is a shallow oblong impression, which is not at all visible in the type of *rubidus.* Length (♂♀) 12.4–14.0 mm.; width 7.4–8.6 mm. Colorado (Denver). Four examples. A male specimen marked "Texas" is somewhat similar to *rubidus* and *lucublandus* but differs in certain minor features..... **lucublandus** n. subsp.

13—Elytra short, not or barely at all longer than wide and always coarsely and conspicuously sculptured..... 14

Elytra distinctly longer than wide and comparatively finely sculptured. 15

14—Body oval in form, strongly convex, shining, the elytra but very little wider than the prothorax. Color dark piceous, the legs and under surface obscure rufous; head barely two-fifths as wide as the prothorax, rather loosely rugulose, smooth basally, the carina sharp and even but not approaching closely to the sides; prothorax relatively well developed, three-fifths wider than long, trapezoidal, with the sides feebly, arcuately prominent beyond the middle, the basal angles broadly rounded; punctures strong, rather close-set, becoming sparser and a little less coarse basally and laterally and finer medially behind the moderate fovea, the punctures umbilicate; toward base, the median line is impunctate; scutellum smooth, with a minute post-central fovea; elytra but little longer than wide, only slightly wider than the prothorax and barely twice as long, circularly rounded in fully apical two-fifths; punctures not very close-set but coarsely impressed, each with a circular annulus, the series not evidently impressed; pygidium finely and feebly scabriculate along the base, elsewhere not coarsely but very distinctly, sparsely punctate, more finely and sparsely in a small apical region; legs short, the hind tibiæ nearly smooth, much shorter than the femora and barely more than twice as long as their apical width. Length (♂) 14.7 mm.; width 8.0 mm. New Mexico..... **curtipennis** n. sp.

Body broadly oblong-oval, gradually much dilated behind, deep shining black in color, the under surface and legs pure pale red-brown; head two-fifths as wide as the prothorax, sculptured as usual, the carina sharply elevated and even but unusually short, about half as long as the distance between the eyes; prothorax two-thirds wider than long, the sides almost evenly and strongly arcuate, more rapidly converging apically, the basal angles not broadly rounded from above; punctures strong, rather sparse, becoming more remote basally and

broadly toward the sides, except at apex; fovea and tubercle moderate; scutellum obtusely ogival, very smooth; elytra barely at all longer than wide, much inflated behind the middle and there more than a fourth wider than the prothorax, circularly rounded in about apical third, much more than twice as long as the prothorax; punctures rather coarsely impressed, each with an elliptic annulus, the series evidently impressed, the confused punctures laterally similarly coarse, becoming less coarse at apex; pygidium with distinct sparse punctures; hind tibiæ much shorter than the femora but only moderately stout, more than twice as long as their apical width; last ventral of the female finely punctulate. Length (♀) 15.5 mm.; width 9.5 mm. Mexico (northern) ..... ***farctus** n. sp.

15—Outline subcylindric, the elytra but little wider than the prothorax. Body (♂) rather slender, obscure red-brown in color, moderately shining, slightly paler rufous beneath; head notably small, barely more than a third as wide as the prothorax, the sculpture and small clypeal teeth as usual, the carina slender, even, moderately long; prothorax two-thirds wider than long, the sides subparallel in more than basal half, then rounded and oblique anteriorly, the basal angles distinct and only very narrowly rounded from above; punctures strong, moderately close-set, deep and very evenly distributed throughout; marginal fringe conspicuous; scutellum ogival, nearly smooth; elytra about a fifth longer than wide, circularly rounded in apical third, the sides barely visibly more arcuate just behind the middle, the series not or but slightly impressed, the small or very moderate punctures well separated, broadly confused externally and very fine apically; pygidium smooth and polished, finely, sparsely punctate; legs short, the hind tibiæ as long as the femora, evidently more than twice as long as their apical width. Female larger and stouter than the male and with the elytra somewhat more inflated just behind the middle; legs similar; hind tarsi as long as the tibiæ. Length (3 ♂, 2 ♀) 13.0–14.0 mm.; width 7.5–8.2 mm. New Mexico (Jemez and Gallina Springs) ..... **effetus** n. sp.

Outline more pyriform, the elytra large, the prothorax relatively small, always much narrower than the elytra; sculpture always rather feeble 16

16—Elytral sculpture obsolescent toward the suture. Castaneous, shining, densely pilose beneath; clypeus slightly truncate at apex, distinctly bidentate, having an acutely elevated line between the antennæ, densely, rugusely punctate anteriorly, smooth at base; prothorax strongly rounded at the sides, strongly narrowed anteriorly, the distinctly sinuate apex finely bimarginate; fovea small, deep, the tubercle short and obtuse; punctures sparse and rather coarse; elytra striato-punctate, the external striæ confused toward apex, the three internal striæ almost obsolete; pygidium sparsely punctate. Length 13.8 mm.; width 8.8 mm. Colorado (near Long's Peak). A single example. [*Bothymus obsoletus* Lec.] ..... **obsoletus** Lec.

Elytral sculpture regular except in *arizonensis* 17

17—Sutural stria almost obsolete, the punctures composing it very minute, the other striæ subequally developed among themselves and

distinct. Body stout, oblong-oval, very shining, dark umber-brown in color, the under surface and legs bright rufous; head two-fifths as wide as the prothorax, rugulose, the base sparsely punctate, smooth medially; carina long, fine, even, attaining the eye-canthus, which is separated longitudinally from the side of the front by a fine distinct suture; clypeus very finely and densely rugulose anteriorly but discretely punctate at base on the slope of the carina, the approximate teeth distinct; prothorax transverse, fully three-fourths wider than long, the sides almost evenly and strongly rounded, more converging apically; fovea shallow, the tubercle distinct; punctures notably fine, very remotely and unevenly scattered throughout; scutellum very broadly ogival, three-fourths wider than long, with a few minute punctures basally; elytra large, a fifth longer than wide, behind the middle nearly a fourth wider than the prothorax, more than two and one-half times as long, circularly rounded in apical two-fifths; striæ regular but not impressed, composed of well separated, distinct but not coarse punctures, becoming minute and sparse near the sides, the second stria as distinct as the others, but the punctures of the subsutural interval become feeble, though not effaced, basally; pygidium polished, finely, sparsely punctate; hind tibiæ short, strongly obconic, scarcely twice as long as their expanded apex and much shorter than the femora; hind tarsi fully as long as the tibiæ. Length (♀) 16.5 mm.; width 9.8 mm. Arizona (probably southern)..... **arizonensis** n. sp.

Sutural stria as well developed as any of the others.....18

18—Hind tibiæ broadly flaring and abbreviated, much shorter than the femora.....19

Hind tibiæ similarly very stout and flaring but longer, about equal in length to the femora.....20

19—Body larger, obese, convex, very shining, more or less pale castaneous, brighter and paler rufous beneath; head of the usual size and form, black, pale anteriorly, rather coarsely rugulose, smooth at base; carina well developed, sometimes with a small medial sinus in the male; clypeal teeth distinct; posterior tooth of the mandibles nearly twice as thick as the median tooth; prothorax short, more than three-fourths wider than long, the sides straight and converging from the broadly rounded basal angles to beyond the middle, there becoming still more oblique to the apex; punctures strong, sparse and uneven in distribution throughout; pit small but deeply impressed, polished, the tubercle moderate; scutellum only a little wider than long, smooth, generally with a small central fovea; elytra evidently elongate, inflated behind equally in both sexes and there more than a fourth wider than the prothorax, circularly rounded in apical third; striæ regular, slightly impressed, rather coarse, the punctures strong, moderately coarse, confused laterally, becoming finer and closer in the male; pygidium black to red, with distinct and moderately sparse punctures, which are rather stronger in the female. Length (♂♀) 12.8–15.8 mm.; width 7.6–9.7 mm. New Mexico (Alamogordo and Albuquerque), Texas (El Paso) and southward to Durango City, Mexico. Nine examples..... **spissipes** Csy.

Body smaller, much less stout, elongate-oval, dark, blackish-piceous in color, pale red-brown beneath, rather shining; head nearly as in the preceding, except that the transverse carina forms a broad sinuate curve from side to side, the ends not separated from the side margins; clypeal teeth peculiarly minute but otherwise normal; prothorax not very transverse, only slightly more than one-half wider than long, the sides and angles as in the preceding, except that the former are less oblique either basally or apically; pit deep, oval, the tubercle obtuse; punctures rather strong and sparse, small and sparser medio-laterad and almost wanting along the median line; scutellum barely wider than long, smooth; elytra distinctly elongate, moderately inflated just behind the middle and there distinctly less than a fourth wider than the prothorax, evidently more than twice as long as the latter; series broadly and distinctly impressed, the punctures not very coarse but distinct and impressed, more confused externally and, toward apex, slightly smaller though much less obviously so than in the male of *spissipes;* pygidium minutely, sparsely punctate, very finely and feebly rugulose along the base; hind tibiæ scarcely twice as long as their apical width, much shorter than the femora; hind tarsi rather longer than the tibiæ. Length (♂) 12.0 mm.; width 6.85 mm. Texas (near El Paso),—Dunn. . . . . **brevipes** n. sp.

20—Pygidium very minutely and remotely punctate, with a few more distinct though sparse punctures toward the lateral ends. Body oblong-oval, rather less convex than usual, polished, pale rufo-ferruginous almost throughout, the head and antero-median part of the pronotum black or blackish; head of the usual size and sculpture, the carina even and long but not attaining the sides; prothorax short, three-fourths wider than long, trapezoidal, with feebly sub-prominent arcuation at the sides beyond the middle, the basal angles rather broadly rounded; anterior pit shallow, the tubercle small; punctures rather small, sparse, subevenly distributed but becoming very shallow, sparser and feebler postero-laterad; scutellum moderate, obtusely ogival, evidently punctate throughout, except at the margins and medio-basally; elytra subquadrate, slightly elongate, parallel, very broadly rounded at apex, more than a fourth wider than the prothorax and nearly two and one-half times as long, the punctures rather small but widely impressed, not close-set in the not distinctly impressed series, fine and confused apically; legs short; hind tibiæ a little more than twice as long as their apical width; last ventral of the female smooth and virtually impunctate. Length (♀) 13.7 mm.; width 8.3 mm. New Mexico (Santa Fé). . **lævicauda** n. sp.

Pygidium distinctly though sparsely punctate though often somewhat closely; upper surface of the body more convex. California. . . . 21

21—Body very stout, subpyriform-oval, large in size, polished, pale castaneous in color, the legs and under surface still paler rufous; head slightly larger than in the preceding, two-fifths as wide as the prothorax, densely and confluently punctate, smooth at base, with discrete punctures intermediately, the carina long, very thin, not attaining the sides and feebly sinuate at the middle; clypeus finely, very densely punctato-rugulose throughout, the subapical teeth

small but acute and spiniform; prothorax less abbreviated, three-fifths to two-thirds wider than long, the sides feebly, then gradually before the middle more strongly, converging, the basal angles only moderately rounded from above, the anterior pit rather small but well impressed, smooth, the tubercle well developed; punctures strong and more or less close-set, becoming smaller and very sparse basally and laterad and generally nearly wanting along the middle posteriorly; scutellum only moderately transverse, ogival, with a few fine punctures basally at each side; elytra slightly longer than wide, relatively large, inflated behind, almost a third wider than the prothorax, broadly rounded at apex; punctures rather small, feebly impressed, not close-set, the regular series not or barely at all impressed, becoming fine and confused externally in about apical third, all the punctures internally becoming rather smaller and feebler and sometimes obliterated near the scutellum; hind tibiæ stout and flaring, but little more than twice as long as their apical width; last ventral in both sexes with fine and confused but not very close-set punctures. Length (♂ ♀) 15.0–19.0 mm.; width 9.0–10.9 mm. Common in various parts of southern California. Thirteen examples.

californicus Csy.

A—Nearly similar but more oblong, less inflated behind, very stout and blackish in color, obscure castaneous beneath, the head a little smaller, the front closely and coarsely punctate, becoming finely, densely scabrous medially; carina approaching the sides more closely; prothorax nearly similar but relatively larger; scutellum more transverse, very obtusely ogival; sparse elytral punctures still smaller, the series wholly unimpressed; apices viewed along the axis of the body transversely arcuate and ascending to the suture, not so nearly horizontal as in *californicus;* hind tibiæ very stout and flaring. Length (♂) 17.2 mm.; width 10.35 mm. Southern California,—Dunn. . . . . **laticollis** n. subsp.

Body less stout and very much smaller in size, similar in the pale color and polished lustre to *californicus;* head small, closely, asperately punctato-rugose, smooth at base, the carina as in *californicus*, the clypeus slightly less densely sculptured and more shining, the teeth similar; prothorax much smaller, distinctly less than three-fifths wider than long, similar in general form and sculpture· scutellum similar, only a little wider than long; elytra longer than wide, more parallel, less inflated behind, circularly rounded in apical two-fifths, about a third wider than the prothorax and two and one-half times as long, sculptured nearly as in *californicus*, the series not in the least impressed; pygidium similarly in great part covered by the elytra; hind tibiæ not quite so stout, distinctly more than twice as long as their apical width; ventral segments shorter, the last almost punctureless. Length (♂) 12.0 mm.; width 7.2 mm. Southern California (the locality not recorded),—Dunn.

scitulus n. sp.

The constancy in form of the bispiculose apex of the clypeus through so many apparently valid species and subspecies, as indi-

cated above, would seem to prove the generic weight of this character when compared with the single spicule of *Ligyrus ruginasus* Lec., which is made the type of a separate genus below. In *tumulosus* Burm., forming the next subgeneric group, these small spiculiform processes are very much more widely separated and this species is also peculiar in its elongate-oval form of body, larger head and basally more thickened hind tarsi. The first species of *Ligyrus* proper, described above under the name *longulus*, has also an elongate-oval form of body and unusually large triangular basal joint of the hind tarsi, the second joint normal however, but the minute spicules of the clypeal apex are approximate as usual.

The paper by LeConte on *Bothynus* (Journ. Ac. Phila., 2d ser., I, p. 87) and the volume of Burmeister's work treating the same subject, appeared almost simultaneously in 1847, so that neither author could allude to the work of the other. Although LeConte's description of *Bothynus morio* was modified somewhat, later on, (Proc. Ac. Phila., 1856, p. 20), there can be no doubt that the original description referred to the species described by Burmeister at the same time as *Podalgus variolosus* and earlier, by DeGeer, as *Scarabæus gibbosus*. The LeContian *morio* is the female of *gibbosus*, this sex being somewhat narrower and more elongate than the male, as can be seen when large series are carefully segregated sexually. That the *Geotrupes juvencus*, of Fabricius, refers to the same species, cannot at least be disproved by evidence to the contrary, his description being valueless in making any refined distinctions. The synonymy given under *Ligyrus gibbosus* in the Biologia by Mr. Bates is therefore correct, except in regard to *neglectus* and *obsoletus* of LeConte which are both specifically valid. The above description of *obsoletus* is taken directly from the original, as I do not now have examples of that species at hand.

Group III.

Subgenus **Anagrylius** nov.

So far as I am able to discover LeConte was in error in ascribing a bidentate maxillary galea to *Ligyrus gibbosus*, though correct in stating that it is tridentate in *neglectus* and *ruginasus*. As a matter of fact it is tridentate in all the species of the restricted *Ligyrus*, including *gibbosus*, but in the present group it seems to have only

two teeth, so far as apparent without complete dissection. This, in addition to the different habitus of the body, widely spaced clypeal denticles and larger head, would seemingly warrant the isolation of *tumulosus* as a separate subgenus, which I have suggested under the above name. The habitat of *tumulosus* was left in doubt by Burmeister and possibly there may be several allied species now known under that name. The following seems to be *tumulosus* Burm., as interpreted by Bates:

Form elongate-oval, strongly convex, polished, black, with very feeble piceous tinge, the legs and under surface paler, castaneous, the abdomen darker brown; head about three-sevenths as wide as the prothorax, sparsely rugose laterally, smoother medially and punctureless basally; carina almost completely and broadly interrupted medially, the two parts angularly prominent and attaining the sides; clypeus of the usual form in the preceding subgenus but with the apex about half as wide as the base, arcuato-truncate, each angle with an erect spiniform tooth, the surface shining, very sparsely, transversely rugulose; mentum convex, coarsely punctate and setose throughout; prothorax three-fifths wider than long, the sides just visibly converging and subsinuate from the broadly rounded basal angles to slightly beyond the middle, there broadly rounded and then oblique to the apex; punctures very small and extremely sparse throughout, the anterior pit very small, subrugulose, the tubercle not elevated but forming a small posterior lobe of the flattened apical margin; scutellum broadly ogival, nearly smooth, having a minute subcentral fovea; elytra about a fourth longer than wide, barely at all wider than the prothorax, circularly rounded in about apical two-fifths, the sides faintly sinuate before the middle for some distance as usual; punctures very moderate, widely spaced in the usual series, which are slightly impressed, broadly confused toward the sides behind about the middle, excepting the usual submarginal double series of very fine regular punctures; pygidium relatively rather small in size, black, shining, strongly, sparsely and rather irregularly punctured throughout, more closely at the lateral ends; hind tibiæ equal in length to the femora, moderately stout and flaring; last abdominal segment of the female sparingly punctate; post-coxal process of the prosternum with the apex more sparsely punctate and setose than usual in the preceding subgenus. Length (♀) 19.5 mm.; width 10.0 mm. Mexico? [*Heteronychus tumulosus* Burm.]

tumulosus Burm.

Under the original description of this species its habitat is said to be "Nord-America (Süd-Carolina) und Westindien (St. Domingo)." Bates records it from Mexico (Vera Cruz), British Honduras and Colombia. The native country of the specimen described above, which was received from a European dealer, is transcribed

as written on the label. It does not seem to be very abundant anywhere.*

Group IV.

Subgenus **Ligyrellus** nov.

The three species assignable to this subgeneric group of *Ligyrus*, do not differ from the true *Ligyrus* in any other way than in having no trace of the very constant anterior pit of the pronotum characterizing that extensive group of species and in their different geographic habitat, but, at the same time, these three species form three sections baseable on the structure of the clypeal apex as follows:

Clypeus edentate and truncate at apex, the truncature a third as wide as the distance between the eyes. Body subparallel, feebly inflated posteriorly, convex, shining, piceo-rufous, slightly paler and only moderately pubescent beneath; head small, coarsely, shallowly punctato-rugose, smooth at base, the carina completely divided into two slender transverse ridges about attaining the sides; clypeus of the usual form, more finely and loosely rugulose; mentum convex, punctate and setose throughout; mandibles as in *Ligyrus;* prothorax scarcely more than one-half wider than long, the sides evenly converging and evenly, distinctly arcuate from the very narrowly rounded angles to the apex; base rather strongly lobed medially; surface apically not modified; punctures rather strong, very sparse, wanting along the middle basally; scutellum wider than long, triangular, smooth; elytra a fifth longer than wide, a fifth wider than the prothorax and more than twice as long, broadly, evenly rounded at apex; punctures rather small, widely spaced in a sutural and four discal double series, the external fine and feeble; wider subsutural and sublateral intervals with sparse confused punctures, the others impunctate for the most part, the punctures postero-laterad broadly confused; pygidium strongly but shallowly, not very sparsely umbilicato-punctate throughout; hind tibiæ rather slender, not as long as the femora, the tarsi equal in length to the tibiæ; prosternal process bristling with setæ throughout. Length (♂) 13.7 mm.; width 8.0 mm. Venezuela. [*Scarabæus fossor* Latr.]. . . . . ***fossor** Latr.

Clypeus bidenticulate 2

2—Pronotum not definitely modified anteriorly, though sometimes with a very shallow rounded impression at each side of the middle. Body oblong, rather convex, stout, dilated posteriorly, shining, dark castaneous, pale rufous and with moderate sternal vestiture beneath; head small though larger than in *fossor*, the front deeply concave

*Since this was written I have received a smaller specimen, said to have been collected by Wickham in southern California; it otherwise exactly resembles the one described above, except that the geminate series of the elytra are rather more impressed,

and finely, closely rugose, the extreme base smooth; carina long, entire, sharply and strongly elevated, not attaining the sides though joined to the sides by a feeble supplementary ridge; clypeus concave and finely rugose, almost exactly as in *gibbosus*, the denticles very small, approximate and spinuliform; prothorax two-thirds or more wider than long, the sides almost evenly arcuate, strongly converging at apex, the punctures sparse but strong and impressed; scutellum wider than long, nearly smooth, ogival; elytra barely visibly longer than wide, rapidly very broadly and obtusely rounded at apex, at apical third much wider than the prothorax, about twice as long; punctures fine, sparse, arranged as in the preceding, more close-set in the double series; pygidium polished, finely, remotely punctate; hind tibiæ notably slender, fully as long as the femora and much longer than the tarsi, which are unusually short relatively. Length (♂ ♀) 15.0–16.5 mm.; width 8.7–9.8 mm. Honduras (San Pedro Sula). Three examples. [*Podalgus nasutus* Burm.]

***nasutus** Burm.

Pronotum tumid along the median line apically. Body more oblong, parallel and less abbreviated, more convex, smooth and shining, blackish-brown, obscure rufous beneath and with long dense conspicuous sternal vestiture, the femora brighter rufous; head small, but little more than a third as wide as the prothorax, the front evenly and feebly convex and with widely separated short transverse rugulosities, the carina completely though narrowly interrupted at the middle, the ridges fine, rather elevated and completely fused with the side margins; clypeus finely, more closely and granularly rugulose, of the usual form but with the apex more broadly obtuse than in *nasutus* or *gibbosus* and with two small, erect and rather approximate denticles; mandibles as in *gibbosus;* mentum of the usual form, punctate and setose throughout; prothorax exactly as in the preceding but rather more narrowed at apex, smooth, extremely finely, sparsely and feebly punctulate, the punctures rather abruptly distinct and closer near the sides; scutellum barely wider than long, smooth, very acutely ogival; elytra not quite a fourth longer than wide, parallel, faintly dilated behind the middle, circularly rounded in about apical third, nearly a fifth wider than the prothorax and much more than twice as long; punctures very sparse, fine and feeble but arranged nearly as in the preceding; pygidium with the punctures rather larger and more close-set than those of the elytra but extremely feeble and shallow, almost wanting medially; hind tibiæ rather stout and apically, strongly flaring, fully as long as the femora and distinctly longer than the tarsi. Length (♀) 17.5 mm.; width 9.7 mm. Chile. [*Podalgus villosus* Burm.]

***villosus** Burm.

In both *nasutus* and *villosus* the maxillary galea is clearly tridentate as in normal *Ligyrus*, but in my single example of *fossor* the galea is not exposed to view. The prominent surface of the pronotum toward the middle apically in *villosus*, is an opposite

extreme to the foveate form prevailing generally in the genus; perhaps the two shallow impressions sometimes seen near the pronotal apex in *nasutus* may be an analogous modification. Neither Burmeister nor Bates makes any allusion to the deep concavity extending throughout the width of the head between the eyes in *nasutus*.

Oxygrylius n. gen.

There are but few structural differences between this genus and *Ligyrus*, but two of these seem to be rather important—the single acute denticle of the clypeal apex and the more or less reduced posterior tooth of the mandibles. In general bodily habitus it is a counterpart of *Ligyrus* and also resembles it in the well developed stridulating area on the under surface of the elytra, but the thoracic fovea is constantly larger, deeper and is always at least partially rugose at the bottom. The genus is not of very wide distribution, inhabiting the region from the lower Rio Grande valley to the tip of Lower California, so far as now known, and there are a number of species, which however, as in all the allied genera, bear a close mutual resemblance, so that care is requisite in studying them systematically. The three forms now at hand are the following:

Posterior tooth of the mandibles evident, though much reduced in size, obtuse 2
Posterior tooth obsolete 3

2—Body stout, more pyriform-oval, very convex, polished, dark rufous in color, not paler beneath; head nearly black, very densely and strongly, rather coarsely punctato-rugose, abruptly smooth at base, the carina high, feebly sinuate medially and not attaining the sides; clypeus extremely densely and more finely rugose and dull, triangular, almost three times as wide as long; mentum flat, rather closely punctate and setose, gradually pointed anteriorly, the point obtuse; posterior mandibular tooth not half as high as the middle tooth, rounded, the first and second very acute; prothorax two-thirds wider than long, the sides almost evenly rounded, becoming very convergent apically, parallel basally, the basal angles, from above, only very narrowly rounded; fovea rather large, rounded, a third the total length, deep, rugose, the tubercle prominent; punctures everywhere fine and sparse; scutellum wider than long, ogival, very minutely, remotely punctulate, with an irregular line of larger punctures parallel to the edges; elytra large, a fifth longer than wide, parallel, circularly rounded in apical two-fifths, a fourth wider than the prothorax and two and one-half times as long, the punctures in series nearly as in *Ligyrus* and small, confused and sparse postero-

externally; pygidium shining but not very smooth, extremely minutely, remotely punctulate, with some stronger close punctures toward the ends and, at the middle near the apex, having a circular arrangement of the very feeble rugulosity; hind tibiæ not very stout, as long as the femora, the tarsi rather stout, much shorter than the tibiæ. Length (♀) 16.8–18.2 mm.; width 9.5–10.8 mm. Texas (Del Rio),—Wickham and El Paso—Dunn. Ringgold Barracks—LeConte. [*Ligyrus ruginasus* Lec.].....**ruginasus** Lec.

Body much more slender, not quite so large, more obscure rufous to castaneous in color and not quite so shining; head nearly similar but with the dense rugulose punctuation rather less coarse; prothorax similar in form and in the fine, very sparse punctuation, the sides arcuately, incurving more toward base, becoming feebly subprominent ante-medially and strongly oblique and converging apically; basal angles rounded; scutellum as in *ruginasus;* elytra more cylindrical, with the punctures of the double series more close-set throughout; pygidium of the female similarly with a feeble apical convexity, finely, feebly and sparsely punctate; tibiæ similar; tarsi nearly black. Male stouter than the female, the elytra more evidently wider than the prothorax, the sides of which are rather more evenly arcuate; pygidium more evenly convex, almost similarly and very feebly sculptured. Length (3 ♀, 2 ♂) 16.0–16.8 mm.; width 9.0–9.7 mm. Arizona (southern).....**pimalis** n. p.

3—Body smaller, rather less convex, more cuneiform, stout, strongly shining and bright castaneo-rufous; head smaller, blackish, the dense rugulosity coarser but more shallow, the sculpture of the clypeus finer, feebler and much sparser than in any other; clypeus with the apex gradually more strongly reflexed; prothorax as in *ruginasus*, relatively smaller and with the anterior pit less developed, more shallow, more transverse and less rugose, the tubercle similarly prominent and acute; scutellum similarly finely, sparsely punctate throughout, except at the edges; elytra barely longer than wide, much inflated posteriorly and there fully two-fifths wider than the prothorax, circularly rounded in about apical two-fifths; punctures as in *ruginasus*, the series not so definitely impressed and having the punctures well separated; general punctures very sparse, almost wanting on the central intermediate interval and apical half of the subsutural; pygidium of the male very smooth, evenly convex and very minutely, remotely punctulate, more impressed near the lower oblique margins than in the other species; hind tibiæ notably slender and rapidly expanded medially and apically as usual, fully as long as the femora and a little longer than the tarsi. Length (♂) 14.8 mm.; width 8.8 mm. Lower California (San José del Cabo).
peninsularis n. sp.

In all the species the sterna are densely punctured and conspicuously pubescent, the post-coxal prosternal process herissate with long setæ throughout as in *Ligyrus*, and the large post-coxal plate is very shining, smooth, finely, sparsely punctate along the base

and toward the sides, the punctures bearing stiff erect hairs, the apex wholly smooth to feebly punctulate.

Pseudaphonus n. gen.

In this genus the general form of the body is somewhat as in *Ligyrus*, though in most species more pyriform, but it differs in the still smaller head, in which the transverse reflexed apical ridge is almost at the extreme apex, less removed therefrom than in *Aphonus* or *Orizabus* and is never bilobed; the clypeal apex in front of the carina bears a very dense porrect fringe of pale setæ. The mentum is nearly flat, rather narrow, gradually obtusely acuminate, moderately punctate and setose throughout. The mandibles must be very minute, as I am unable to perceive the slightest vestige of them in any of my examples, nor of the maxillary galea; careful dissection would be necessary in order to describe the mouth-parts, which differ so completely from those of *Ligyrus* as to suggest the propriety of a separate tribal group for *Pseudaphonus*, *Aphonus* and *Orizabus*, as previously suggested. The legs and tarsi are nearly as in *Ligyrus* but rather longer and more slender, the anterior tibiæ always tridentate, similar in the sexes and more obtuse at tip as in *Aphonus*, but they may be reduced by wear to a pointed semi-edentate condition. The sterna are are similarly pubescent, but the post-coxal process of the prosternum is shorter, more slender, more acuminate and less pubescent, being always in part nude, though never at the apex. Sexual differences are exceedingly feeble and the male is relatively rare; it differs from the female only in its slightly shorter form, in having the last ventral a little shorter, with its apex broadly and feebly sinuate and the lower marginal beading of the pygidium less thick, the pygidial apex more angulate, but the surface does not differ much in convexity or sculpture. The base of the prothorax is immarginate and strongly lobed medially throughout. The species are rather numerous, disseminated over the southern Rocky Mountain regions and far to the southward in Mexico, where at least one species has been described by Mr. Bates under the name *Cheiroplatys fairmairei*. Our species, so far as known to me, are as follows:

Body distinctly pyriform, the elytra greatly exceeding the prothorax in width 2

Body oblong-oval, the elytra relatively less broad, never more than a fourth or fifth wider than the prothorax.....3

2—Outline but slightly pyriform, moderately shining, dark castaneous throughout; head notably small, barely more than a fourth as wide as the prothorax, finely, closely punctate, the tubercle rather strongly elevated and acute, otherwise as in *pyriformis*, the clypeus almost similar but apparently with the apical carina much less rapidly reflexed and thicker, entirely worn down in the type; prothorax shorter, three-fifths wider than long, widest near basal third or fourth, the sides thence converging and arcuate to the apex and converging to the basal angles, which are broadly obtuse but scarcely at all rounded; sculpture throughout very nearly as in *pyriformis;* scutellum similar but more deeply impressed along the median line basally; elytra almost similar in form though scarcely a third wider than the prothorax and much more than twice as long, the punctures similarly rather large and well separated, very shallow, umbilicate and abruptly defined, the subsimilar regular series barely at all impressed; pygidium similar but with the lower marginal bead less broad, likewise separated from the disk by a fine groove; last ventral rather more strongly arcuate medially but finely, rather closely punctate, with smooth hind margin. Length (♀) 15.0 mm.; width 9.0 mm. Colorado (the locality unrecorded). . **debiliceps** n. sp.

Outline more strongly pyriform; body much larger in size, very convex, shining, dark castaneous, a litle paler rufous beneath; head less than a third as wide as the prothorax, black, finely, densely punctate and with fine transverse wavy rugæ throughout, the tubercle in the form of a low rounded ridge, posteriorly arcuate from a dorsal viewpoint, becoming obsolete at lateral fourth; clypeus trapezoidal, nearly flat, almost three-fourths wider than long, the apical carina thin, strongly elevated and rather posteriorly arcuate from a vertical viewpoint; line of punctures along the outer side of the middle joint of the antennal club fine and widely separated; prothorax widest near basal third, the sides almost evenly arcuate, rather more so basally, more converging and less arcuate anteriorly, the basal angles broadly rounding into the sides; punctures anteriorly rather fine, deep and dense from side to side, gradually becoming well separated, coarse, shallow and umbilicate posteriorly, except toward the middle, where they are even smaller than apically but shallower, wanting along the median line in about basal half; scutellum perfectly smooth, not impressed basally; elytra large, oval, slightly elongate, the sides arcuate, the apex evenly rounded, two-fifths wider than the prothorax and evidently more than twice as long; punctures disposed nearly as in the preceding species, rather large but very shallow, the series rather distinctly impressed and the punctures externally rather closer and more confused, smaller on the apical declivity; pygidium finely, densely rugulose, not becoming entirely smooth even at the middle apically, the lower beading rather thick and convex. Length (♀) 16.5–18.6 mm.; width 10.0–11.7 mm. New Mexico (Las Vegas and Fort Wingate). Three examples. [*Bothynus pyriformis* Lec.].....**pyriformis** Lec.

3—Elytra distinctly elongate.....4
Elytra short, barely longer than wide, more coarsely and deeply sculptured; color bright rufous, the surface polished.....5

4—Color piceous-black, the under surface and legs dark piceous, shining; head very small, a fourth as wide as the prothorax, finely, deeply and densely punctate, the clypeus more finely and sparsely and feebly rugulose; tubercle high, obtuse, rounded, not laterally attenuated though slightly transverse; clypeus trapezoidal, the sides sinuate basally, the apical carina only slightly reflexed, rather deeply sinuate transversely and a little less than half the basal width; prothorax four-sevenths wider than long, widest at basal fourth, the sides strongly converging and feebly, evenly arcuate to the apex, rounding inwardly at base, the obtuse basal angles moderately rounded; apical angles rather sharp, the apical sinus circularly rounded as usual; punctures strong, deep and very dense anteriorly and not different, though less dense, postero-laterad, much smaller and sparse posteriorly, the median line punctureless almost throughout and, toward base, feebly impressed; scutellum smooth, very feebly concave medially; elytra oblong, parallel, the sides almost evenly and broadly arcuate, the apex circularly rounded, only about a fifth wider than the prothorax and slightly more than twice as long; punctures widely separated, rather coarse, feebly impressed, the long shallow annuli well defined, the series only very slightly impressed; pygidium finely, closely, irregularly punctulate throughout, equally strongly at apex medially, becoming less finely rugulose toward the ends, the lower bead wide, flat, the inner groove interrupted at the middle in the type. Length (♀) 16.8 mm.; width 10.0 mm. New Mexico (Fort Wingate).....**ovalis** n. sp.

Color obscure castaneous, moderately shining, not much paler beneath; head but little more than a fourth as wide as the prothorax, finely, densely punctate and feebly subrugulose, the tubercle transverse and obtuse, obsolete within lateral fourth; clypeus in form nearly as in the preceding, the apex in the type much worn down, the resulting flat surface posteriorly angulate, with a small median sinus at apex, a form seemingly impossible to derive from the apical part of *ovalis* if similarly worn down; the central tubercle, also, is much thinner antero-posteriorly than in *ovalis* and laterally less abbreviated; prothorax nearly as in *ovalis* in form and sculpture, except that the punctures are not quite so coarse and much shallower, the sides at basal fourth more angularly subprominent and the punctureless unimpressed median line more punctate anteriorly; scutellum ogival, perfectly flat and smooth; elytra less elongate, a sixth longer than wide, nearly a fifth wider than the prothorax, the sides less parallel, feebly inflated behind the middle, circularly rounded at apex, the punctures similarly rather coarse, shallow, elongate annuli but not impressed, the series unimpressed; pygidium finely, closely punctato-rugulose, smooth and with minute punctures medially toward apex, the lower bead broad and flat, the groove uninterrupted as usual. Length (♀) 16.6 mm.; width 10.3 mm. New Mexico (Santa Fé). **repens** n. sp.

5—Body oblong-oval, strongly convex, highly polished; head not quite a third as wide as the prothorax, finely, densely and deeply punctate, the clypeus also with fine transverse rugæ; tubercle thin anteroposteriorly, acute and extending laterally scarcely at all, being unusually abrupt; apical carina very thin, vertically and strongly elevated, and, from above, feebly, posteriorly arcuate, its lateral angles not sharp but distinct, right; sides of the middle joint of the antennal club with three or four fine punctures; prothorax more transverse, two-thirds wider than long, widest at basal fourth, where the sides are evenly and strongly rounded inwardly to the very obtuse basal angles, distinctly converging and evenly, very moderately arcuate thence to the rather sharp apical angles, the apex circularly sinuate as usual; punctures anteriorly shallow, umbilicate, very dense, becoming coarse and confluent toward the sides thence to the base; throughout the width they are much smaller, very sparse but unequally distributed, nearly wanting in a sublateral discal spot; median line in great part punctureless; scutellum very smooth; elytra evidently inflated behind, fully a fourth wider than the prothorax and more than twice as long, the series of well separated, shallow, annular punctures broadly and conspicuously impressed; pygidium finely, closely punctulate and rugulose throughout, subangulate at apex, where the bead is very thick. Male similar to the female just defined but shorter, the head and tubercle similar but the clypeal apex is much broader though similarly carinate, the pygidium similar throughout and angulate at apex, but with the marginal bead much finer; legs and tarsi as in the female. Length (♂♀) 14.6–16.5 mm.; width 9.5–10.7 mm. Colorado (Fort Collins) and New Mexico (Fort Wingate)..... **lucidus** n. sp.

Besides the division made above, in regard to outline of the body, into pyriform and oblong species, another division might be suggested into species with unimpressed or very feebly impressed elytral striæ and species with coarsely sulciform striæ, the first including all the species excepting *lucidus;* in the latter species it may be noted besides, that the sides of the prothorax basally project laterally more beyond the line of the elytral humeri in both sexes; this same character prevails among certain forms of *Aphonus* as well.

Aphonus Lec.

This genus is closely allied to the preceding, having the same very small head and usually completely concealed mandibles, which are minute, laminate, not dentate externally and with the apex finely pointed and slightly everted, but the transverse carina at the clypeal apex is much more retracted and is always tridentate, the median tooth sometimes smaller and feebler than the lateral; the actual

apex of the clypeus, in front of the carina, is usually minutely mucronate medially. The maxillary galea is slender and apparently has two longer terminal teeth and an outer one more retracted and smaller. The head also differs from that of *Pseudaphonus* in having no such well marked central tubercle, but usually instead, a simple fine feeble ridge adjoining the clypeal suture. The prothorax differs in being widest at base, generally with distinct, or at least never broadly rounded, angles, but with similar immarginate and medially lobed basal margin. The mentum is more narrowly drawn out at apex, the lower beading of the pygidium less developed and the erect post-coxal process of the prosternum slender, obtusely acuminate and setulose throughout. The pygidium does not differ much sexually, except that it is more convex in the male and its lower margin, as well as the apex of the abdomen, is heavily beaded, both beads generally interrupted medially; the apical abdominal beading is never present in *Pseudaphonus*. Finally, the body is always much smaller in size and the geographic habitat is very different, *Aphonus* occupying the moist and well watered Atlantic districts, while *Pseudaphonus* inhabits the arid mountainous country of the southwestern or Sonoran regions. The species are rather numerous but sometimes closely allied among themselves, so far as general habitus is concerned; those in my collection may be known as follows:

Three prominences of the subapical clypeal carina equal among themselves 2

Three prominences very unequal, the median very small and often completely obsolete; body smaller in size and more abbreviated 10

2—Form elongate, subparallel, the elytra not distinctly inflated, the color black, obscure ferruginous beneath; integuments only moderately shining to dull in lustre 3

Form stout, the elytra more or less inflated 4

3—Body convex; head small, transversely rugulose, it as well as the clypeus coarsely rugose, the rugæ bioblique on the latter; subapical teeth rather broadly rounded; prothorax about a third wider than long, the sides moderately converging, evenly and rather strongly arcuate from base to apex, the basal angles from above slightly obtuse, though scarcely more than blunt at apex, rather well defined, the apical rather sharp, the apex circularly sinuate; base immarginate as usual, strongly lobed medially; punctures fine and sparse, stronger laterad and especially strong and close-set toward the apical angles; elytra only very slightly longer than wide, a fifth wider than the prothorax and about three-fourths longer, circularly rounded pos-

teriorly, barely visibly wider behind than before the middle, each with seven moderate and subequally spaced, slightly impressed striæ, having well separated shallow punctures, the flanks with widely dispersed, smaller, more confused punctures; pygidium (♂) strongly convex, minutely scabriculate, becoming smooth and unevenly, not sparsely punctulate medially and with a deep foveiform concavity at each end, or (♀) less scabriculate, more distinctly and sparsely punctate medially and apically, less convex and without the lateral foveæ; hind tibiæ notably slender and, in both sexes, longer than the tarsi. Length (♂ ♀) 12.3–14.0 mm.; width 7.0–8.2 mm. Wisconsin (Bayfield) and from an unrecorded locality. Arkansas,—Say. [*Scarabæus tridentatus* Say]..... **tridentatus** Say

Body similarly convex but more elongate and a little more shining, black, the under surface and legs dark red-brown; head scarcely a third as wide as the prothorax, with very coarse but shallow, irregular rugulosity throughout, the transverse carina wholly obsolete; clypeus trapezoidal, short, the reflexed anterior carina fully half as long as the width at base, the teeth obtuse; side margins very finely reflexed; prothorax less than one-half wider than long, the sides rather feebly converging, evenly and not strongly arcuate from base to apex, the basal angles right and well defined, not rounded, the apices merely somewhat blunt; apex circularly sinuate, the base moderately lobed medially; punctures small and very sparse in about basal, somewhat stronger and less sparse in apical, half, larger toward the sides, especially so and closer anteriorly; median line with but few punctures; scutellum narrow as usual and longer than wide, ogival, smooth, feebly concave; elytra fully a fifth longer than wide, a fourth wider than the prothorax and more than twice as long, parallel, with almost evenly arcuate sides, the apex rapidly very obtusely rounded; discal striæ seven, with two finer sublateral, the striæ broadly and distinctly impressed, with moderate, distant, annulate punctures, the second interval alone with an irregular series of coarse punctures, which have the enclosed annuli extremely small; pygidium very transverse, three times as wide as long, shining, blackish, finely scabriculate toward the ends and along the base, elsewhere finely and sparsely punctate, the lower beading widely interrupted at the middle, the abdominal very broad laterally but everywhere feebly defined and wholly obsolete at the middle; legs rather long and slender; male more inflated posteriorly than the female. Length (♀ ♂) 14.5–15.5 mm.; width 8.1–9.5 mm. Maine (Monmouth),—C. A. Frost..... **elongatus** n. sp.

4—Color deep black throughout above when mature, the under surface piceo-rufous; legs nearly black, long and rather slender.....5

Color always pale red-brown, or at least in part rufo-piceous when mature.....6

5—Pygidium in both sexes smooth, polished, feebly but not very sparsely punctate, minutely and feebly scabriculate near the ends and along the base; head and clypeus nearly as in the preceding, only the female having a very fine feeble median vestige of the transverse ridge; prothorax less than one-half wider than long, more trapezoidal, the

sides moderately converging and nearly straight, becoming gradually rounded and more converging before about the middle; basal angles very distinct, as in the preceding; basal lobe distinct, evenly rounded; punctures strong laterally, sparse (♂), rather dense (♀), in the former close-set anteriorly; medially, the punctures are small and rather sparse, becoming very remote basally; scutellum as in the preceding; elytra not at all (♂) or but just visibly (♀) longer than wide, distinctly but gradually inflated behind, a fourth to two-fifths wider than the prothorax and much less than twice as long, rather abruptly and very obtusely rounded at apex, the striæ broadly and deeply impressed nearly as in the preceding, except that the second interval has only a remotely spaced series of very small feeble punctures, which are wanting in apical half as usual; pygidium (♂) notably convex, strongly arcuate above and with strong entire lower beading, or (♀) much more transverse, shorter, with broadly interrupted lower beading. Length (♂♀) 13.5–14.3 mm.; width 8.7–9.2 mm. Maine (Paris)—male, and New Hampshire—female.

aterrimus n. sp.

Pygidium of the male finely, densely and very evenly rugulose throughout, without trace of smoother area or of any kind of punctuation; body nearly as in *aterrimus* but with the elytra less broadly inflated, shining, the under surface blackish-piceous; head small as usual, having transversely waving and interlacing, longitudinally widely separated rugulæ throughout, with only an extremely fine raised transverse line representing the transverse ridge, the clypeus short and trapezoidal as usual, the three teeth obtuse; prothorax throughout as in the preceding, except that the converging sides from base to apex are evenly and moderately arcuate, the basal angles rather blunter, and that there is an entire punctureless median line; scutellum slightly broader, though longer than wide; elytra barely visibly longer than wide, barely a fourth wider than the prothorax and distinctly less than twice as long, not so abruptly or obtusely rounded behind and with more feebly, much less broadly impressed striæ, the annuli within the impressed punctures very much smaller, the second interval with more numerous and much coarser punctures and the fourth also with a line of punctures; punctures on the apical declivity similarly confused but even more completely obliterated and shallow; pygidium strongly convex, black, its lower beading broad, flat, entire but with its inner margin irregular, broadly sinuate at each side and feebly so at the middle; abdominal bead strong; legs slender. Length (♂) 14.0–14.3 mm.; width 8.8–8.9 mm. Pennsylvania.....**densicauda** n. sp.

6—Hind tibiæ slender and a little shorter, the tarsi slightly longer, so that the tibiæ and tarsi are subequal in length, barely differing in the female. Body stout, less so in the male, very convex and polished, bright though rather dark red-brown, still paler and brighter rufous beneath, the legs obscure rufous, the femora paler; head small, with transversely interlacing and widely separated rugulæ, the transverse carina represented by a very fine, posteriorly arcuate raised line; clypeus unusually concave, short, trapezoidal,

the finely laminiform side margins distinct; subapical carina much more (♂), to correspondingly less (♀), than half as long as the basal width, the teeth obtuse; prothorax shorter, more than one-half wider than long, the sides evenly converging and very evenly arcuate from base to apex, the basal angles narrowly rounded, the lobe distinct but gradual in formation; punctures coarser and more impressed than in any of the preceding, unevenly distributed, generally very sparse, though becoming rather close-set anteriorly equally throughout the width; median line at least in part broadly punctureless; scutellum elongate, very smooth, broadly and feebly concave; elytra barely visibly longer than wide, only feebly inflated posteriorly and broadly, circularly rounded at apex, fully two-fifths wider than the prothorax and evidently more than twice as long; series only feebly impressed but composed of well spaced and notably coarse, deeply impressed punctures, each with the usual annulus at the bottom relatively small; intervals except 1–3–5, which are a little narrower, each with more or less complete single series of coarse and widely spaced punctures; on the flanks toward the sides the punctures are more or less uneven, confused and not quite so coarse; pygidium bright rufous, convex and longer in the male, minutely, densely punctulate throughout (♂), or becoming smooth and sparsely punctulate medially (♀). Length (♂♀) 13.0–13.3 mm.; width 7.9–8.7 mm. Florida (Jacksonville). Three examples. [*Bothynus variolosus* and *Aphonus hydropicus* Lec.]..... **variolosus** Lec.

Hind tibiæ longer, the tarsi relatively, or even actually, shorter, not as long as the tibiæ.....7

7—Anterior transverse carina of the clypeus high as usual, the teeth broadly obtuse.....8

Anterior carina low or wanting.....9

8—Elytra abruptly and strongly inflated posteriorly. Body oblong-suboval, very convex, extremely polished, dark red-brown throughout, except the elytra, which are piceous-black; head rather more than a third as wide as the prothorax, finely, sparsely, transversely rugulose, the clypeus still more loosely, more brokenly and sharply, the transverse frontal ridge very fine but evident almost from side to side; clypeus only moderately short, the apex rather more than half as wide as the base; prothorax large, convex, one-half wider than long, the sides of the base extending beyond the elytral humeri; sides moderately converging, evenly and distinctly arcuate from base to apex, the basal angles barely more than right and not at all rounded, the median lobe strong; punctures strong and very close-set antero-laterad and nearly as strong but less close thence to the base toward the sides, elsewhere small and sparse, becoming still more remote basally, without impunctate line; basal edge smooth and sharply, very rapidly beveled; scutellum fully as wide as long, concave; elytra but just visibly longer than wide, the sides converging anteriorly, broadly rounded at apex, at apical third nearly a fourth wider than the prothorax, three-fourths longer; punctures rather small, extremely shallow and annular and in about seven regular, broadly, moderately impressed dorsal lines, the flanks with two

fine and feeble series, which are obsolete apically; pygidium nearly three times as wide as long, minutely, rather sparsely punctulate, becoming feebly scabriculate at the ends and along the base, the lower bead interrupted; apical abdominal bead very wide laterad but obsolete medially. Length (♀) 13.6–14.2 mm.; width 8.5–9.3 mm. Illinois and Michigan.....**congestus** n. sp.

9—Sides of the thoracic base extending very slightly beyond the elytral humeri as in the preceding. Outline oblong-suboval, very convex, strongly shining, rather pale castaneous, the head and pronotum darker and more rufo-piceous; head barely a third as wide as the prothorax, sparsely, transversely rugose, the clypeus very feebly so, the frontal ridge subprominent at the middle, rapidly evanescent laterally; clypeus less abbreviated than usual, rather concave, the subapical carina shorter, only a third as long as the width at base and completely obsolete, the three small erect prominent teeth arising from the level of the general surface behind them, this formation evidently not being a result of wear; prothorax nearly one-half wider than long, the sides evenly and distinctly arcuate and converging from base to apex, the basal angles somewhat blunt at tip, the lobe rather broad and moderate, the bevel of the basal edge convex, not deep or well defined; punctures everywhere shallow and umbilicate, sparse, larger and a little closer antero-laterad, fine and remote through most of the remainder of the disk, with a nearly punctureless median line; scutellum but little longer than wide, obtusely ogival, feebly concave; elytra large, a sixth longer than wide, only feebly and gradually inflated posteriorly, about a fifth wider than the prothorax and twice as long, obtusely rounded at apex; punctures and striæ nearly as in the preceding, except that there are apt to be some linearly arranged punctures on the slightly wider alternate intervals and more scattered punctures near the sides, which become obsolescent apically as usual; pygidium rather convex, much less than three times as wide as long, finely, feebly scabriculate, becoming smooth and with minute, very remote punctures medially and apically; apical bead unusually fine, becoming thick only at the sides, obsolescent at the middle. Length (♀) 15.3 mm.; width 9.7 mm. New York (the locality unrecorded).....**politus** n. sp.

Sides of the thoracic base not in the least projecting, the general outline of the body much more pyriform. Color dark piceo-rufous, the elytra rather less pale, the under surface and legs pale red-brown; lustre shining; head much less than a third as wide as the prothorax, the transverse rugulosity sharper, stronger and less sparse than in *politus*, that of the clypeus feebler than on the vertex; base smooth at the middle; frontal ridge fine and feeble but sharp and distinct; slightly sinuate, becoming obsolete far from the sides; clypeus trapezoidal, distinctly concave, the subapical transverse carina half as long as the basal width, much longer than in *politus* and feebly elevated, the teeth large and obtusely triangular; prothorax rather less than one-half wider than long, much smaller than in *politus* and of a distinctly different outline, the converging sides very feebly arcuate, gradually more strongly so and more convergent apically,

the basal angles not rounded, only slightly blunt at apex, the median lobe moderate, the beveling of the edge not differentiated; punctures fine, sparse, a little larger and close-set toward the apical angles and, as usual, larger laterad than medially, with a nearly impunctate median line; scutellum narrow, longer than wide, obtusely ogival; elytra but very slightly longer than wide, moderately inflated just behind the middle, where they are more than two-fifths wider than the prothorax, distinctly less than twice as long; series on the dorsal part about ten in number, by reason of intermediate regular series not present in any of the preceding species, the series impressed, the intermediate less so as a rule, the punctures moderate, the two series on the flanks distinct to the apex; pygidium rufous, nearly as in the preceding but less convex and more transverse. Length (♀) 14.0 mm.; width 8.9 mm. Indiana.....**modulatus** n. sp.

10—Sides of the prothorax at base projecting laterally a little further than the ends of the elytral base as in some of the preceding species. Body oblong, subparallel in form, dark castaneous, the elytra nearly black in the female; head very small, scarcely more than a fourth as wide as the prothorax, closely, confusedly rugose, smooth throughout at base, the clypeus strongly and transversely rugose medio-basally, concave and nearly smooth broadly toward the sides and apex, the sides oblique anteriorly, becoming nearly parallel basally; subapical carina bidentate, the median tooth obsolete, the teeth larger in the female; transverse frontal ridge obsolete; prothorax nearly three-fifths wider than long, trapezoidal, the oblique sides only feebly arcuate and rounding in at base; basal lobe very broad; punctures small throughout, moderately close-set apically, elsewhere very remotely scattered; scutellum slightly elongate, very obtusely ogival, feebly concave, smooth as usual; elytra oblong, parallel or very faintly dilated apically, very broadly and obtusely rounded at apex, slightly longer than wide, a sixth (♂) to fourth (♀) wider than the prothorax; punctures rather small, well separated, impressed, with a very minute annulus at the bottom, the three regular pairs of series rather impressed, the intermediate series regular, nearly entire but not so impressed, the punctures broadly confused on the flanks, obsolescent apically; pygidium bright red, minutely, densely scabriculate throughout (♂), or less convex, shorter and with the medio-apical part smooth and finely, sparsely punctate (♀), the lower beading equal, strong and distinct throughout in both sexes; legs slender. Length (♂♀) 10.0–10.5 mm.; width 6.7–6.8 mm. North Carolina (Southern Pines),—Manee. **trapezicollis** n. sp.

Sides of the thoracic base not laterally projecting, exactly as wide as the elytral base.....11

11—Prothorax notably large, the hind tarsi longer, though still distinctly shorter than the tibiæ. Body very stout, oblong-suboval, convex, moderately shining, blackish-castaneous, the elytra black when mature, the under surface paler, the abdomen and pygidium bright rufous; head between a third and fourth as wide as the prothorax strongly, confusedly rugose, the entire basal half smooth; clypeus

evenly trapezoidal, smoother and concave laterally, the sides nearly straight, arcuate basally, the subapical carina less than half as long as the basal width, strongly bidentate, with an intermediate tooth about half the size of the lateral; prothorax rather more than one-half wider than long, the converging sides evenly and rather strongly arcuate from near the base to the apex, rounding in slightly at base, the angles obtuse and slightly rounded, the basal lobe rather strong; punctures small and very remotely scattered, a little larger and less sparse anteriorly throughout the width, wanting in a small post-central area; scutellum longer than wide, very obtusely ogival, impressed longitudinally; elytra not at all, or barely, longer than wide, a sixth (♂) or fourth (♀) wider than the prothorax and twice as long, parallel, very feebly dilated posteriorly and very broadly, obtusely rounded at apex; punctures moderate, shallowly impressed, each with a distinct annulus, the series nearly as in the preceding; pygidium very transverse in both sexes, finely, closely scabriculate throughout and strongly convex (♂), or flatter and with a large medio-apical area smooth and sparsely punctulate (♀), the lower bead entire, moderate and equal in the former, or medially dilated in the latter, sex; elytra of the male duller than in the female. Length (2 ♂, 2 ♀) 11.0–11.3 mm.; width 7.4–7.7 mm. Alabama (Mobile) ..... **saginatus** n. sp.

Prothorax relatively small; hind tarsi slightly shorter but slender.... 12

12—Body small and very stout, gradually rather strongly inflated behind, shining, pale castaneous-red throughout to black above, the anterior parts always at least with feeble piceous tinge; under surface paler, castaneous, the abdomen and pygidium paler; head very small, barely more than a fourth as wide as the prothorax, rugose, smooth at base, the frontal ridge wholly obsolete, the clypeus more feebly rugose, with basally arcuate oblique reflexed sides, concave laterally, the reflexed subapical carina with two large obtuse teeth and a third very minute between them; prothorax not quite one-half wider than long, trapezoidal, with evenly and rather strongly rounded sides, the punctures small and remote, becoming a little larger and less sparse anteriorly; scutellum nearly as wide as long to narrower, very obtuse at apex; elytra generally rather evidently longer than wide, about a fourth wider than the prothorax in both sexes, very obtusely rounded at apex, the sculpture nearly as in the preceding; pygidium (♂) convex, finely, closely scabriculate but with the apex at the middle less densely so, or (♀) less convex and in great part smooth and sparsely punctate, the lower beading never much thickened medially. Length (23 ♂, 5 ♀) 8.5–10.5 mm.; width 5.8–6.9 mm. The male distinctly smaller than the female, which is relatively much less common. Massachusetts and Rhode Island to North Carolina. [*Bothynus castaneus* Mels.; *Podalgus obesus* Burm.] **castaneus** Mels.

Body not quite as small and very much stouter, oblong, convex, shining, black above, with feebly picescent anterior parts, the under surface and pygidium very obscure piceo-rufous; head not so small, nearly a third as wide as the prothorax, not wavy-rugulose as in *castaneus*,

but closely and irregularly punctate, very smooth throughout at base; transverse ridge obsolete; clypeus nearly similar in outline and lateral structure but with discrete punctures basally, instead of wavy rugulæ, the subapical transverse carina strongly bidentate, without trace of a median denticle; prothorax slightly more transverse, more than one-half wider than long, the sides converging and strongly, evenly arcuate, rounding in conspicuously at base, the basal lobe broad and moderate; punctures distinct though rather sparse equally throughout the width apically, becoming finer and very remotely scattered thence to the base; elytra not or barely longer than wide, not very distinctly inflated behind, parallel and arcuate at the sides, very obtuse at apex, fully a third wider than the prothorax and a little more than twice as long; sculpture nearly as in the others of this section, the flanks (♀) coarsely rugose and with a deep marginal gutter for a short distance behind the humeri; pygidium polished, sparsely though distinctly punctate, with intermingled minute punctulation, becoming feebly but densely scabriculate at base and laterally, the lower beading equal and entire. Length (♀) 9.8–11.3 mm.; width 6.8–7.5 mm. Two examples, taken near Brooklyn, Long Island..... **cubiformis** n. sp.

The anterior tibiæ are of peculiar structure, nearly similar throughout in this genus and *Pseudaphonus*, and are not different in the sexes as they are so markedly in *Orizabus;* they are always purely tridentate externally, very obtuse at apex and the last tooth projects directly outward unusually close to the second tooth and is much reduced in size; in *Aphonus* the tibia is almost smooth, having merely a line of close setigerous punctures, but in *Pseudaphonus* it is stouter and is strongly sculptured. The species defined above are all based upon apparently obvious structural differences and, in spite of their unanticipated numbers, are probably valid; but one is unknown to me and this may be defined as follows by quotation from the original description:

Aphonus frater Lec.—Piceous-black, nigro-ferrugineous beneath; head rugose, finely margined, obsoletely elevated on the vertex; clypeus at apex emarginate and mucronate, slightly behind the apex with a transverse elevated tridentate line; prothorax with the sides rounded, punctate sparsely on the disk behind the middle; elytra punctato-striate, the intervals not serially punctate; pygidium punctulate, toward apex nearly smooth, with a few sparse distinct punctures; last abdominal segment with a marginal bead. Length (♂) 16.2 mm. One specimen. New Jersey.

There is too little said in this short diagnosis to permit of any useful conclusion in regard to its systematic position; the length is greater than that of any known to me, but this is possibly over-

stated, as it is under *Aphonus castaneus* further on; the male, having a partially smooth and discretely punctate pygidium, undoubtedly indicates an alliance with the jet-black *aterrimus* from the colder parts of New England, and it may be placed near that species in the table.

Orizabus Fairm.

Cheiroplatys Bates nec Hope.

It seems better to retain this name for certain American Pentodontids described by Fairmaire, LeConte and others, and not to transfer the species to *Cheiroplatys*, as suggested by Bates in the Biologia; we have the testimony of Lacordaire and Fairmaire that the two genera are different, though closely allied, and my observations on the maxillary galea show that there is no marked accordance with the form of that organ in *Cheiroplatys* as described by Burmeister. The body is stout and oblong or ovoidal, strongly convex, the head small, the clypeal carina placed well behind the actual clypeal apex as in *Aphonus* and the frontal prominence is variable in form but never very conspicuous. The mentum is strongly punctured and setose and its moderately narrowed ligular part is sharply angulate and slightly deflexed at tip, the angle fitting loosely into a deep emargination of the short thick labrum. The mandibles are small, thin, laminate, slightly concave, more or less ciliate on the rounded and edentate outer margin and are completely hidden as a rule; only when widely open, can they be seen protruding slightly at the sides of the clypeal apex. The post-coxal process of the prosternum is very densely setose throughout as in *Ligyrus* and the sterna are similarly conspicuously pubescent.

There has been considerable divergence of opinion regarding the maxillary galea, LeConte and others observing that the apex is bidentate, while each of these apical teeth is declared to be duplex by Bates. There are only very few of my examples in which the galea is exposed and in these the tip is rather plainly tridentate as in *Ligyrus*, but the three teeth are not in the same plane, the plane of the outer two making a considerable angle with that of the inner two, so that at certain angles only two teeth can be seen.

Although allied to *Aphonus*, this is a very isolated generic type

and the only American Pentodontid having the pronotum differently modified sexually, but its affinities are so clearly in harmony with *Ligyrus* in certain habital features, that it cannot be placed among the Oryctini under the present definition of that tribe. Its components have been the source of much confusion and misconception since the original species was described by LeConte under the name *Aphonus clunalis*, which, however, he correctly surmised was not its proper generic position. Then G. H. Horn described two species, apparently without suspecting that either had any close relationship with *clunalis* Lec., an unexplainable oversight. Finally, as stated above, the genus was confounded with the Australian *Cheiroplatys* by Bates, because of a number of suggestive resemblances. The largely unwarranted synonymy, not only here but in *Ligyrus*, introduced by Mr. Bates, caused that author to unite two distinct genera, as on plate 18 of the Biologia, figure 23 is said to represent the male of *Cheiroplatys fairmairei*, though it can plainly be seen to be a *Pseudaphonus* allied to *pyriformis* Lec., which was originally described as an *Aphonus*, the genus differing radically, among other ways, in having no trace of sexual modifications of the pronotum and in its very small head; figure 24 is said to be the female of *fairmairei*, which it evidently cannot be, but is the female of a true *Orizabus*, the female in *Aztecalius* being strongly pyriform; nor does figure 20 represent the female of a species in any way closely allied to *cultripes*, correctly depicted in figure 19; the legend at the bottom, referring to figure 20, evidently should be ♀ and not "♂." One curious result of all this confusion is the fact that the largest and bulkiest species of *Orizabus* yet discovered, and apparently the most abundant of all, is still without a name. The trouble is due in some measure to the close mutual resemblances, not only between species but between genera in this part of the tribe. That true species bear these mutually close inter-resemblances can be demonstrated by the ample series which I have taken time to bring together; it is only by comparing series that specific differences become obvious in many cases.

There are two rather distinct subgeneric groups in *Orizabus*, which may be defined as follows:

Front centrally tuberculate; clypeus arcuate at tip, the post-apical carina bilobed; female similar in general form to the male, the latter having the anterior tibiæ evenly arcuate externally, the female tridentate. Group I

Front not tuberculate but with an even transverse ridge; clypeus truncate at apex, the post-apical carina straight and even, not bilobed; male with the anterior tibiæ unisinuate externally, tridentate in the female; body smaller in size and differing sexually in form, oblong (♂) or pyriform (♀).....Group II

The second of these groups occurs only in the tropical regions of Mexico, where it replaces the more northern typical *Orizabus*.

Group I.

Subgenus **Orizabus** in sp.

The type of this group is the generic type *Orizabus cultripes* Fairm., of which I have only a single female; it is distinguished from any of those described below by having the basal bead of the pronotum obsolete, though sometimes feebly traceable in the sublateral impressions of the basal margin; otherwise it harmonizes very well with more northern species of the *snowi* type. In all of the species here defined the basal bead is entire and well developed. The anterior tibiæ of the female, in recently emerged examples, are very strongly tridentate externally, the apex somewhat less obtuse than in *Aphonus* and *Pseudaphonus* and the last tooth rather more oblique, but through wear, the tibiæ frequently assume such a shape that it is difficult to trace their original outline even approximately. The species may be defined as follows:

Apical pronotal impression (♂) very large and deep, extending laterally through about half the entire width and longitudinally through half the length. Body very large and stout, oblong, subparallel, convex, shining, dark castaneous to black above, bright and pale red-brown beneath; head (♂) between a third and fourth as wide as the prothorax, coarsely and densely punctato-rugose, broadly impressed transversely between the eyes, the tubercle strong and abrupt, with two fine raised lines extending outward obliquely from its base; trapezoidal clypeus more than twice as wide as long, the straight sides abruptly and strongly lamellately elevated, the high subapical carina strongly bilobed; antennal club a little shorter than the stem; prothorax three-fifths wider than long, the sides rounded and converging anteriorly in about apical, straighter and feebly convergent posteriorly in about basal, half, slightly sinuate near the base, the basal angles moderately rounded, the median lobe broad, the beading strong and entire; punctures coarse and close-set anteriorly, more asperulate in the oval depression, coarser and very confluent toward the apical angles and, to a less extent and deeper, posteriorly toward the sides, elsewhere finer, becoming obsolete medially; apical tubercle very high and abrupt; scutellum rather

wider than long, acutely ogival; elytra a fifth or sixth longer than wide, parallel, barely at all inflated behind, broadly and circularly rounded at apex, a fifth or sixth wider than the prothorax and not quite twice as long, the striæ coarse and impressed, including large and very shallow, close-set annular punctures, confused externally and closer apically, the alternate intervals only partially punctate; pygidium shining, very minutely, sparsely punctulate, becoming closely subrugulose only at the lateral ends, the lower beading thick and entire; hind tarsi stout, much shorter than the tibiæ, the basal joint and, to some extent, the second, obliquely produced externally. Female nearly like the male though rather more elongate, the clypeus less transverse, the tubercle less elevated or abrupt; pronotum without impression, the tubercle represented only by a minute angulate posterior enlargement of the apical beading, the punctures anteriorly less coarse, though strong and more or less confluent antero-laterad; elytra similar but about a fourth wider than the prothorax and twice as long; pygidium nearly as in the male but still more completely sculptureless; abdomen punctured only near the sides. Length (6 ♂, 7 ♀) 22.5–27.0 mm.; width 12.8–15.7 mm. New Mexico (Albuquerque) and Texas (El Paso). Not uncommon.

ponderosus n. sp.

Apical pronotal impression (♂) much smaller, only a fourth to barely a third the total width and much less than half the entire length; body narrower and smaller in size.....2

2—Hind tarsi rather stout and moderately developed as usual; elytra always distinctly elongate and not or scarcely inflated posteriorly..3

Hind tarsi notably small and slender; elytra but little longer than wide, inflated at apex and there much more conspicuously exceeding the prothorax in width.....4

3—Body much narrower and more elongate, very feebly inflated posteriorly, not very shining, castaneous, the anterior parts more blackish, the under surface obscure castaneous; head fully a third as wide as the prothorax, finely and densely rugulose, the tubercle abrupt, the subapical carina broadly bilobed; prothorax shorter, more than one-half wider than long, the sides broadly and feebly rounded, more strongly and more rapidly converging anteriorly, slightly oblique at base, the basal angles very obtuse and moderately rounded, the bead thick and entire; tubercle moderate, rather broad, the impression small and very feebly impressed, indefinitely limited, about a fourth the total width and not a third the length, the bottom impunctate but dull; punctures elsewhere anteriorly coarse, very rugosely confluent, less coarse and confluent at the sides, very fine, feeble and sparse discally; scutellum ogival, with strongly arcuate sides and a short canaliculation at apex in the type; elytra longer than usual, a fourth or fifth longer than wide, a sixth wider than the prothorax and much more than twice as long, sculptured nearly as in *snowi*, the pygidium nearly similar but with the coarse gutter at the middle of the apex much more abruptly formed, not continued laterally as it is in that species and with the

oblique sides also finely subrugulose, as well as the ends. Female similar but a little larger and longer, the elytra a fourth wider than the prothorax, which has moderately strong, confluent sculpture anteriorly, the tubercle represented by a posteriorly ascending and obtusely angular expansion of the apical beading; head nearly as in the male, the oblique sides of the clypeus barely at all elevated; pygidium less convex, more punctulate laterally and with the marginal groove not dilated medially. Length (♂♀) 18.8–20.0 mm.; width 10.5–11.0 mm. New Mexico (Jemez Springs),—Woodgate. **fontinalis** n. sp.

Body larger in size, oblong, convex, piceo-castaneous, somewhat dilated posteriorly; head densely, rugosely punctate, very finely margined; clypeus rounded and submucronate at apex, armed slightly behind the tip with a strongly elevated, bidentate line; frontal suture distinctly sinuate and with a small median tubercle; prothorax strongly rounded at the sides, moderately punctate, the disk nearly smooth toward base, having behind the apex a small fovea and, at the apex, a very short tubercle; elytra punctato-striate, the punctures externally smaller and confused; propygidium more finely punctate [than in *Aphonus tridentatus* and *castaneus*], smooth at apex and without any transverse rugæ; pygidium smooth, moderately convex; abdomen with a single transverse series of coarse punctures on each segment, the last segment finely margined; hind tibiæ thicker than in *Aphonus*, the transverse crest at the middle prolonged externally into an acute tooth; "maxillary galea bidentate." Length 23.7 mm. Arizona. (A single specimen probably found in the Gila Valley). [*Aphonus clunalis* Lec. (♂); *Orizabus ligyroides* Horn (♀)—Arizona (Morrison)]. . . . . **clunalis** Lec.

Body nearly similar; thoracic fovea of the male less than a third of the total width and length of the pronotum, sometimes faintly longitudinally divided, or with its hind margin slightly prominent medially; subcylindric, only slightly dilated posteriorly, castaneous, throughout, shining, the dense hairs beneath pale yellow-brown; head (♂) rather less than a third as wide as the prothorax; rugose, the tubercle moderate, at the angle formed by two fine oblique ridgelets; clypeus trapezoidal, not one-half wider than long, convex along the middle, thence feebly concave to the sides, which are barely at all elevated; apex flat, arcuate, not mucronate, the postapical carina notably high and strongly bilobed; prothorax rather more than one-half wider than long, evenly rounded at the sides, which are rather more converging apically, converging and straight basally and widest at basal third of the median length, the basal angles very obtuse but not much rounded, the median lobe broad and rounded, the bead broad and strongly defined throughout; punctures antero-laterad very coarse and confluent, less so posteriorly along the sides, gradually becoming fine and sparse inwardly, very minute in the concavity and obsolescent medially; impression deep, transversely oval, the tubercle moderate, its anterior face smooth, flat and inclined, being a prolongation of the flat apical bead; scutellum wider than long, smooth, ogival; elytra about a

fourth longer than wide, broadly rounded at the not very obtuse apex, nearly a fourth wider than the prothorax and somewhat more than twice as long, the coarse striæ gradually more deeply impressed internally, having large shallow annuli, finer externally and confused apically; pygidium convex, smooth, minutely, sparsely punctulate, becoming coarsely but feebly rugulose laterally and more finely basally, the apical gutter at the middle not deep or abrupt, caused as usual by the more abrupt convexity of the surface behind it; hind coxal plates punctured and conspicuously pubescent throughout. Female nearly like the male but rather narrower and more elongate, the pronotum at apex with a mere vestige of the tubercle, caused by a feeble angular enlargement of the apical beading, the punctures generally smaller, sparser and less conspicuous, than in the male, as is usual; pygidium flatter but almost similarly sculptured. Length 19.5–22.5 mm.; width 11.5–13.0 mm. New Mexico (a male and female taken by F. H. Snow and probably forming part of the material serving for the original description), also Cloudcroft (three females taken by Mr. Knaus), and a pair taken by Woodgate at Jamez Springs; also Mexico (Chihuahua—two females taken by C. H. T. Townsend)..... **snowi** Horn

4—Body ovoidal in form, convex, shining, castaneo-rufous; head fully a third as wide as the prothorax, transversely rugose, the fine sinuous raised line marking the clypeal suture expanded and feebly tumulose at the middle; clypeus with the oblique sides straight, only very finely and feebly elevated, the surface flat, the subapical carina only moderate, its medial sinus cutting almost to the base; prothorax barely one-half wider than long, the sides rounded and much more parallel than usual, more rapidly converging at apex, the basal angles very obtuse, the bead only moderate and not so sharply defined at the middle; punctures fine and very sparse, obsolescent medially, becoming rather strong and closer apically, though well separated even antero-laterad; scutellum as long as wide, very obtusely ogival and rounded at the sides, smooth as usual but with traces of a fine impressed median line; elytra inflated behind and broadly, rather obtusely rounded at apex, fully two-fifths wider than the prothorax and much more than twice as long, the sculpture nearly as in *snowi;* pygidium shining and smooth, nearly flat, almost three times as wide as long, finely but distinctly, sparsely punctured, less finely and subcoalescently near the lateral ends, the apical bead flat, equal, well defined, bearing a series of coarse punctures medially; margin of the expanded apex of the hind tibiæ perfectly even as usual. Length (♀) 17.7 mm.; width 11.0 mm. Mexico (Sierra Madre Mts., Chihuahua),—C. H. T. Townsend. . ***parvitarsis** n. sp.

Organs of stridulation are probably wholly wanting as in *Aphonus*, the propygidium being minutely and remotely punctulate and sparsely pubescent. The pygidia seem to be rigidly connate, except at the sides, where the suture becomes much coarser and deeper, this structure also being as in *Aphonus*, as well as the Euro-

pean *Pentodon*. In *ponderosus* the teeth of the maxillary galea are long, subequal, very sharply pointed and sharply angulate along their upper inner sides, while in *snowi*, as representing the *clunalis* type, they are thicker, decidedly more obtuse at apex, not longitudinally carinulate and are more unequal, the outer tooth being much shorter than the two inner. The lobes of the subapical clypeal carina are frequently found worn entirely away, leaving two scar-like surfaces surrounded by fine elevated rims, due to the fact that the interior substance of the carina is softer than the polished exterior surface, but at first it seems difficult to account for the peculiar finely margined appearance of these eroded surfaces. The above description of *clunalis* Lec., is derived directly from the original and it will be observed that in the original descriptions of both *clunalis* and *snowi*, the anterior impression of the pronotum is said to be small, which could not be even approximately correct language if the reference were to the thoracic impression of *ponderosus*; but it is probable, nevertheless, that Mr. Fall had *ponderosus* in mind, and not the true *clunalis*, in his description of *Cheiroplatys verticalis*, which, however, because of the crenulated apex of the hind tibiæ, does not belong to this genus but to *Xyloryctes*, under which it will be again brought to notice.

Group II.

Subgenus **Aztecalius** nov.

This subgeneric group has for its type the *Orizabus isodonoides* of Fairmaire, abundant in the regions about the City of Mexico. There are several species or subspecies, as can be seen from the material in my collection, but, being unable to identify the typical species of Fairmaire, it would be unsatisfactory to undertake any differentiation of them at the present time. The female in this subgenus is in appearance very unlike that of the female of *Orizabus* proper, being strongly pyriform, almost exactly as in both sexes of the genus *Pseudaphonus;* it was probably this that misled Mr. Bates in assigning *fairmairei* (*Pseudaphonus*) to the genus *Cheiroplatys* (*Orizabus*).

Anoplognatho Rivers.

Aphonides Riv.

This is the most aberrant genus discovered thus far among the American Pentodontids, not only in the mouth parts and sexual differences in the pygidium, but in its 9-jointed antennæ, with a subglobular club, having its basal joint large and the outer two not attached at its base but successively beyond, the third joint not half as large as the first, its general structure being exactly as in the European *Pentodon*. In external features the head is very much as in *Ligyrus* or *Aphonus*, and has a high transverse frontal ridge and trapezoidal clypeus, with the apex obtusely acuminate, somewhat as in *Anastrategus*, with one section of which the peculiar antennæ also harmonize, but the mandibles are distinct and strong, attached near the sides of the base of the mentum, enlarged apically, ciliate on the outer side except apically, where they are expanded, widely visible from above, with the outer contour broadly rounded or subtruncate. The mentum is moderately acuminate and deflexed at apex and is coarsely, densely punctate and setose throughout. The last palpal joint is also aberrant, being almost perfectly cylindric, with very obtuse apex. There is nothing remarkable about the body in general, the sterna being moderately pubescent, the post-coxal process of the prosternum small and concealed in a dense brush of long stiff hairs as in *Ligyrus* and the abdomen with the usual single series of punctures on each segment, the pronotum completely unmodified on the disk in either sex, the legs rather slender, of a purely Ligyrid type, the anterior tibiæ tridentate in both sexes; but the moderately flaring apex of the posterior tibiæ is coarsely and irregularly crenulate as in *Xyloryctes*, and the pygidium of the male is very convex, extremely large and with very even surface, while that of the female is of ordinary dimensions, transverse and strongly, transversely swollen near the middle, very much as in *Anastrategus* which follows. The female otherwise does not differ greatly from the male, except that the body is very much smaller in size. The basal joint of the hind tarsi is much less prolonged externally at apex than in any of the preceding genera, again approaching *Anastrategus*. In many ways *Anoplognatho* serves in fact as an intermediate between the Ligyrid or Aphonid types and *Anastrategus*, notwithstanding that the pronotum is

unmodified in any way by impressions or tubercles, being perfectly simple as in the Cyclocephalids. I have not been able to determine whether stridulating organs are present or not. There is but a single described species as follows:

Male oblong, strongly convex, gradually feebly inflated behind, castaneous to blackish, the anterior parts black, strongly shining; head evidently more than a third as wide as the prothorax, very coarsely punctato-rugose, the transverse ridge entire, gradually more elevated medially, very precipitous behind but forming the sloping clypeus in front, the slope continuing to the moderately upturned and narrowly truncate tip, the clypeus short, strongly trapezoidal, with slightly sinuate sides; antennæ moderate, thick, the club relatively very small, scarcely longer than thick; prothorax nearly three-fourths wider than long, the sides rather strongly, evenly rounded, more convergent apically than basally, the base broadly arcuate medially, not impressed near each side and with a thick entire marginal bead; punctures coarse apically, very coarse and confluent antero-laterad, elsewhere very sparse though still moderately coarse and somewhat deep; scutellum as wide as long, extremely obtusely ogival, with rounded sides and some scattered coarse punctures; elytra a sixth longer than wide, not abruptly rounded behind, widest behind the middle and there fully two-fifths wider than the prothorax, fully two and one-half times as long, each with three discal and one sublateral double series of very small and feeble punctures, the two inner costulæ slightly convex, all the sculpture extremely fine, feeble and subobsolete, except on the broad second interval, where the confused punctures are sparse, coarse, moderately impressed and subrugose; pygidium evenly and strongly convex, two-thirds as wide as the elytra, two-thirds wider than long, strongly arcuate above, smooth, with fine dense punctulation at the lateral ends and a few coarse punctures scattered near the base; propygidium everywhere finely but deeply, densely and rugulosely punctate, the suture deep and free throughout. Female smaller and rather narrower than the male, polished, black in color, castaneous beneath, the sculpture of the same character as in the male but everywhere less accentuated and, on the elytra, almost obsolete; basal bead of the pronotum broadly obsolete medially; scutellum more rugose at base; pygidium two and one-half times as wide as long, feebly arcuate above, with close-set and strong punctures everywhere except on the transverse, prominently convex surface which slopes rather abruptly apically from just below the middle of the length, the apical margin finely, rather abruptly reflexed, the surface nowhere pubescent; last ventral long, broadly subangulate at apex. Length (♂) 24.8, (♀) 21.0 mm.; width (♂) 13.2, (♀) 11.5 mm. Arizona (Tuçson), —Wickham..... **dunnianus** Rivers

An extended account of this genus was given by Mr. Rivers (Bull. Cal. Acad., 2d ser., I, p. 100), based upon El Paso specimens,

taken by Mr. G. W. Dunn, but the generic name was subsequently changed to *Aphonides*, because of the previously published name *Anoplognathus;* I hold this change of name to have been unnecessary and, besides, *Aphonides* is much less suitable. In my single pair the maxillary galea is not visible, but the author states that it is broadened apically, rounded, unarmed and ciliate. The last palpal joint in the El Paso specimens, as indicated by the drawings, is very much stouter than in the Arizona examples above described and the basal joint of the antennæ very much larger and longer, but I am unable to state whether or not this may be due to inaccurate observation. The connection between the pygidia is perfectly free throughout the width in this genus.

Anastrategus n. gen.

The large species constituting this genus have hitherto been considered as a section of *Strategus*, of the tribe Oryctini, but there are so many affiliations with the Pentodontini, through *Bothynus*, in general habitus and *Anoplognatho*, in the transversely and submedially tumid pygidium of the female, that the necessity for placing the group in the present tribe, under which circumstance it must receive a special generic name, seems to be rather evident, although it differs from *Strategus* only in a single important character, which is the absolute asexuality of the pronotal modifications. In fact, the distinction between the Pentodontini and Oryctini, as at present drawn, may be considered so essentially artificial, that the assignment of purely subordinate value to the Pentodontini, as merely a group of the Oryctini, suggested by LeConte, may be the proper solution of the question, or else the erection of several tribal groups in addition to the Pentodontini and Oryctini.

The body is oblong or subcylindric-oval, the head as in *Strategus*, the pronotum with an oval anterior depression and apical tubercle, exactly as in *Orizabus*, except that it is precisely similar in the sexes and that the tubercle is wholly independent of the flat apical beading, which in *Orizabus* extends upward and forms the anterior face of the tubercle. The mentum is of the usual Pentotomid type, the ligular part moderately constricted and rounded at tip, and the entire surface is generally punctured and setose. The mandibles are large and heavy, greatly exposed at the sides and almost as in

Anoplognatho, except that they are tridentate externally as in *Ligyrus*, the middle tooth becoming very large in the *cessus* type, almost eliminating the two lateral teeth, which become greatly diminished in size. The apex of the clypeus is obtusely acuminate and moderately upturned, the transverse frontal ridge inconspicuous and generally divided. The post-coxal process of the prosternum is moderate and bristles with setæ throughout as in *Ligyrus*, the pronotum always with a strong marginal bead at base as in *Strategus*, and the pygidium differs in the sexes, sometimes very distinctly. The propygidium is always transversely though moderately sculptured, and stridulation is usually evident. The hind tibiæ are as in *Strategus*, the outer side at tip being deeply sinuate, the bottom of the sinus variously modified. The anterior tibiæ are quadridentate as in *Strategus*, and the upper tooth is always feebly developed; the basal joint of the hind tarsi is slender, also as in *Strategus*, and not produced obliquely at apex as in *Orizabus; Anoplognatho* is intermediate in this respect. The elytra have each a coarse deep subsutural stria, which is sometimes flexed outwardly at base along the scutellum.

The species are rather numerous, although only two have been described and they are distributed from the more southern Atlantic coastal regions to northern Mexico. Those in my collection may be known as follows; they are divisible into two distinct groups, inhabiting different zoological regions:

Antennal club nearly as in *Pentodon* and *Anoplognatho*, its joints successively diminishing in length; mandibles broadly obtuse and lobiform externally, the lateral teeth feeble or obsolete; body broader, more oblong, less convex and less shining. Sonoran regions.....2

Antennal club with its joints of equal or subequal length as in *Strategus;* mandibles strongly tridentate, though less strongly in the female; body more oval, convex and shining, of more pallid coloration and smaller size. Atlantic regions.....7

2—Body larger in size, at least 30 mm. in length.....3

Body very much smaller.....6

3—Elytra gradually and but very feebly inflated behind.....4

Elytra more or less conspicuously inflated behind.....5

4—Pygidium (♀) with the transverse ridge slightly above the middle, the surface thence to the base rather densely and rugosely punctate and pubescent. Body oblong, broad, rather strongly convex and shining, black, the under surface and legs bright red-brown; sternal vestiture abundant but rather short, erect; head rather more than a third as wide as the prothorax, coarsely, confluently punctate

throughout, the anterior canthus of the eye very moderate; transverse ridge high, bilobed; clypeal apex not very obtuse; mandibles concave dorsally as usual; mentum very coarsely punctate; prothorax unusually transverse, fully two-thirds wider than long, the sides oblique and feebly arcuate in anterior half, parallel and feebly arcuate posteriorly to the very broadly rounded basal angles; base broadly, feebly arcuate medially; concavity deep, circular to transversely oval, about a third the width and half the length of the pronotum, very coarsely rugose; punctures coarse and slightly separated laterally, subconfluent along the base sublaterally, very coarse, rugose and confluent antero-laterad, elsewhere less coarse and widely separated; median line feebly impressed; tubercle low, obtuse and binodulose; scutellum broadly ogival, obtuse at tip, smooth; elytra nearly a fourth longer than wide, only a fifth or sixth wider than the prothorax and nearly two and one-half times as long, very evenly and circularly rounded behind from very near the middle of the length, each with several impressed lines and with rather small sparse punctures throughout, sometimes larger and irregularly impressed near the suture basally; pygidium smooth and glabrous in the concave lower part, the apical margin dilated at the middle and with close-set irregular punctuation and pubescence; last ventral, except apically, and the penultimate medially, moderately and rather closely punctate, the segments with the usual single entire lines of small setigerous punctures. Length (♀) 31.0–35.5 mm.; width 17.0–19.0 mm. Arizona and New Mexico. Five examples. [*Strategus cessus* Lec.]..... **cessus** Lec.

A—Pygidium (♀) with the transverse ridge still further above the middle. Body as in *cessus* but a little more elongate, the anterior canthus of the eye larger and more prominent, the prothorax less abbreviated and the elytra rather longer, more evenly parallel, more deeply sinuate medially at base, broadly rounded behind in barely apical third and with the sculpture less obsolete, there being in about inner third and basal two-thirds rather large though feebly impressed and transversely subrugose punctuation; last ventral segment completely impunctate and smooth though finely, closely punctulate along the basal margin, the penultimate with only a few fine punctures medially. Length (♀) 33.8 mm.; width 18.0 mm. A single example, without indication of locality but probably from New Mexico..... **cavicauda** n. subsp.

5—Body broad and oblong, deep black, strongly shining, pale castaneo-rufous beneath; head (♂) nearly two-fifths as wide as the prothorax, very coarsely punctato-rugose, the clypeus less coarsely, the transverse ridge strongly elevated, feebly sinuate medially, not attaining the sides; clypeal apex feebly upturned, unusually acute; anterior tooth of the mandibles distinct but broadly rounded, the posterior obsolete; prothorax fully three-fourths wider than long, the sides strongly rounded, becoming straighter and very oblique anteriorly, the basal angles broadly rounded; depression a third the total width and half the length, oval, very deep, the bottom coarsely but shallowly punctato-rugose, the tubercle broadly and evenly obtuse at

tip, rather strongly elevated but gradually evanescent laterally; punctures small and very sparse, becoming coarse but not dense along the base, except medially, and also anteriorly between the fovea and the apex; scutellum moderate, obtusely ogival, very smooth; elytra only between a fifth and sixth longer than wide, widest and evidently dilated at about apical third, a fourth wider than the prothorax and but slightly more than twice as long, very obtusely rounded in only about apical fourth of the length; three double sets of impressed lines sufficiently evident, but the sculpture otherwise is almost completely obsolete, consisting of excessively minute remote punctulation, stronger and closer on the apical declivity below the umbones; pygidium large, nearly smooth, a little more convex above than below the middle, closely punctured and pubescent at the lateral ends and also toward base throughout the width; hind tarsi slender, very nearly as long as the tibiæ. Length (♂) 32.5 mm.; width 18.7 mm. Mexico (Tepehuanes, Durango), —Wickham.....***durangoensis** n. sp.

Body nearly as broad but more pyriform, moderately shining, black, the elytra dark castaneous, the under surface and legs pale and bright rufous; head (♂) rather more than two-fifths as wide as the prothorax, strongly and densely punctato-rugose, the clypeus equally coarsely so but more discretely, the clypeal apex rather broad and very obtuse; transverse ridge less coarse or elevated than in the preceding but otherwise nearly similar; anterior ocular canthus prominent, somewhat angulate posteriorly toward tip; mandibles with the anterior tooth very distinct, rounded, the posterior also rather evident though very obtuse; prothorax not three-fifths wider than long, widest at about the middle, the sides thence very feebly converging to the narrowly rounded basal angles and strongly converging anteriorly, the apical sinus feebly arcuate medially—transverse medially in the preceding; cavity large and deep, more than a third the width and about three-fifths the length, coarsely but shallowly vermiculato-rugose, this sculpture also extending laterally to the anterior angles; surface elsewhere sparsely, rather unequally and distinctly punctate, the punctures becoming very coarse and subconfluent basally, the median line deeply impressed toward base; tubercle moderate, strongly binodulose; scutellum wider than long, smooth, very obtuse; elytra scarcely an eighth longer than wide, much expanded behind basal two-fifths and fully three-sevenths wider than the prothorax, circularly rounded in fully apical half; sculpture nearly as in the preceding, except that even the three double sets of fine impressed lines are barely evident; pygidium large, slightly more than twice as wide as long, the upper half broadly convex and in great part finely punctured and pubescent, the lower half obliquely sloping but barely at all concave, nearly smooth, though with rather coarse remote punctures toward the apex, becoming confluent at the lateral ends; hind tarsi evidently shorter than the tibiæ. Length (♂) 33.0 mm.; width 18.2 mm. Arizona (probably southern). Levette collection..**inflatus** n. sp.

6—Oblong, feebly inflated behind and subequally in the sexes, shining,

black, pale castaneous beneath; head (♂) two-fifths as wide as the prothorax, unusually short, very coarsely, densely punctato-rugose, the clypeus much less coarsely and rufescent; concavity between the eyes distinct; clypeal apex rather acute but not distinctly reflexed, having two fine, posteriorly diverging carinæ, with a concavity between them; prothorax nearly three-fourths wider than long, the sides broadly rounded, becoming straighter and strongly converging in about anterior half, the basal angles rather broadly rounded; concavity deep, moderate, a third the width and half the length, at a distance from the apex equal to a fourth to third its own length, its sculpture, as well as that of the general surface, somewhat as in *inflatus*, the tubercle small, feeble, very obtuse and generally feebly bifid; scutellum moderate, smooth, with a few coarse punctures at base; elytra a fifth longer than wide, broadly inflated behind the middle, the sides thence rather obliquely and moderately rounded to the apices, which are individually rounded, a third or fourth wider than the prothorax and much more than twice as long, the sculpture nearly as in the preceding species but stronger, especially toward the sides, where the series of moderate punctures are rather conspicuous; pygidium much shorter and more transvere than in the two preceding male types, convex and pubescent in about basal third, thence sloping and nearly smooth to the apex, which is somewhat sinuato-truncate at the middle. Female distinctly larger than the male and a little stouter, otherwise nearly similar, except that the frontal ridge is stronger, the clypeal apex simple, acute and more upturned, the pronotal sculpture similarly disposed but everywhere much coarser and more conspicuous, the elytra less punctate on the flanks and the pygidium a little shorter, with the transverse ridge above the middle very strongly elevated, the surface below it deeply concave, the apex evenly arcuate and less heavily beaded, the middle part of the apical bead punctured and setose (♂), or nude (♀). Length (2 ♂, 1 ♀) 25.0–27.8 mm.; width 13.7–15.2 mm. Arizona (Prescott),—Oslar . . . . . **tantalus** n. sp.

7—Hind tarsi longer, subequal in length to the tibiæ, the basal joint almost as long as the width of the scutellum. Body elongate-oval, very convex, polished, pale and bright red-brown equally above and beneath; head two-fifths as wide as the prothorax, everywhere extremely coarsely punctato-rugose, gradually very shallowly so toward the clypeal apex, which is broadly and obtusely rounded, the dorsal part between the fine raised margins acuminate, with the apex reflexed; transverse ridge slightly tumid, feeble and indefinite, not interrupting the rugosity; prothorax scarcely more than a third wider than long, the sides very evenly rounded throughout, gradually more converging anteriorly, the basal angles broadly rounded; base strongly beaded, broadly, feebly lobed medially, the apical sinus broadly arcuate medially; impression circular, deep, rugose in very coarse wavy lines, not a third the total width but half the length, the tubercle strong, disrupting the neighboring apical bead, its apex binodose; punctures moderate and sparse laterally, the sculpture anteriorly taking the form of long coarse wavy rugulosity, enclosing

minute punctures; nearly the basal half of the disk is smooth, having only extremely minute and remote punctulation, except a few coarse ruguliform punctures along the base; scutellum smooth, parabolic; elytra a fifth longer than wide, circularly rounded in more than apical two-fifths, the sides thence parallel to the base, not inflated, only very slightly wider than the prothorax and less than twice as long, smooth and sculptureless, except the sutural stria, a few feeble vestiges of fine discal lines and a feeble punctuation on the apical slope below the umbones; pygidium almost evenly and strongly convex, strongly transverse, the upper margin transverse, descending laterally, the surface in basal third coarsely, confusedly punctate and with erect hairs, near the ends becoming much less coarsely and more sparsely punctate, otherwise smooth, excepting a few coarse setigerous punctures near the lower margin. Length (♀) 29.5 mm.; width 15.3 mm. Florida (Kissimmee) ..... **cognatus** n. sp.

Hind tarsi much shorter than the tibiæ, the basal joint much shorter than the width of the scutellum 8

8—Depression of the pronotum having the form of a rounded fovea, equally well defined on all sides. Body oblong-suboval, shorter and stouter than in the preceding, with much shorter prothorax, similar in coloration and lustre; head (♂) a third, or (♀) two-fifths, as wide as the prothorax, coarsely rugose, not distinctly concave and sometimes with rather discrete coarse punctures, the clypeus always less strongly rugose, especially toward apex, which is nearly as in the preceding; mandibles (♂) with the middle tooth broader than the anterior and twice as high, or (♀) smaller, not differing much from the anterior; base of the head smooth and punctureless as usual; prothorax one-half to nearly three-fifths wider than long, widest just behind the middle, the sides rounded, gradually more converging anteriorly, the basal angles moderately rounded; base strongly beaded, broadly, feebly lobed medially; apex almost evenly sinuate, not arcuate medially as in *cognatus;* depression variable in size, from very small and feeble to a third the total width, extending to the middle of the length; sculpture throughout nearly as in the preceding, the tubercle variable, sometimes rather high and pointed, in other cases very moderate, with the apex more binodulose, always lower, more obtuse and less developed in the female, a tendency toward the Oryctini; scutellum obtuse, smooth, with numerous coarse close-set punctures on the broad basal slope; elytra shorter than in *cognatus*, not or but very slightly longer than wide, more broadly rounded at tip, relatively wider, fully a fourth wider than the prothorax and about twice as long, similarly almost completely devoid of sculpture; pygidium (♂) less than three times as wide as long, almost evenly convex, more flattened apically toward the sides but not medially, smooth, punctured and pubescent basally; propygidium with close transverse strigilation and usually a cluster of hairs medially, this being probably part of a stridulating apparatus, or (♀) much shorter and more transverse, sometimes nearly four times as wide as long, the surface not differing much but usually relatively more convex basally. Length (3 ♂, 3 ♀) 26.5–29.4 mm.; width

13.7–16.5 mm. North Carolina (Southern Pines) to Florida (Jacksonville). [*Scarabæus splendens* Beauv.]. . . . . **splendens** Beauv.

Depression of the pronotum very shallow, not defined at the sides. Body larger, much stouter, darker castaneous in color, paler rufous beneath, strongly shining throughout; head (♀) not over a third as wide as the prothorax, having a coarsely reticulate rugulosity, mingled with distinct punctures, not concave, the smooth base embossed as usual; ridge feeble but distinct, broadly divided; clypeus sculptured like the vertex but less coarsely, the apex as in the two preceding; mandibles with the two anterior teeth much more unequal than in the female of *splendens*, the middle tooth broadly and obtusely prominent but less so than in the male; prothorax differing greatly in outline, trapezoidal, with evenly and distinctly arcuate sides, widest near the base, the angles broadly rounded, the apical sinus even, transverse medially; sculpture as in the two preceding species, the apical tubercle low, feeble and obtuse but nearer the beading than in *splendens*, the latter having the bead intact, while here its posterior edge is disrupted opposite the tubercle; scutellum coarsely, closely punctate on the steep basal slope; elytra broad, parallel, with more arcuate sides than in the preceding, only very little longer than wide, obtusely rounded in apical third, nearly a third wider than the prothorax and twice as long, the sculpture obsolete as in the two preceding; pygidium short and very transverse, almost four times as wide as long, in surface and in sculpture nearly as in *splendens;* broadly arcuate apex of the last ventral with a small apical lobe, which is separated from the general surface by a transverse area of eroded punctuation bearing a cluster of hairs, these hairs continued along the apical margin to the sides; in *splendens* there is a similar arrangement but without a projecting median lobe. Length (♀) 29.0 mm.; width 17.4 mm. North Carolina (Southern Pines),—Manee . . . . . **carolinensis** n. sp.

The pygidium is not so different in the sexes in the *splendens* type as in some of the species of the *cessus* division of the genus, where in such forms as *durangoensis* and *inflatus* it reminds us very much of the conditon observable in *Anoplognatho;* this is another fact tending to prove the close affiliation of that extraordinary genus with the Strategid, rather than the Aphonid, section of the Pentadontid—Oryctid series, although the prothorax has no trace of modification in either sex.

Durangoensis is different from any of the species described by Dr. Kolbe from nothern Mexico (Berl. Ent. Zeit., 1906, p. 14). *Strategus adolescens*, *beckeri* and *fallaciosus* belong, however, to the present genus, and a mere glance at the photographs given by the author, will convince one that two distinct genera are involved among the forms now included under *Strategus*.

Tribe Oryctini.

If we divide the genus *Strategus* as indicated above, separating those species having no cephalic or pronotal distinction of the sexes, under the name *Anastrategus*—and it is difficult to see how under the present definition of the Pentodontini any other consistent course could be taken,—there is absolute continuity between the Pentodontini and the Oryctini, but in outward habitus there is so profound a difference between the species of the two tribes, due to the conspicuous sexual peculiarities of the male in the latter, that the desirability of segregating them into two tribal groups, even though a somewhat arbitrary procedure, can be maintained with much plausibility. The pronotal modifications of the male in *Strategus*, even in the most depauperate stages, is of an entirely different character from that seen in either sex of *Anastrategus*, and I am therefore rather surprised to find *Strategus mormon* interposed between *splendens* and *cessus*, by Dr. G. H. Horn in his short review of *Strategus* (Tr. Am. Ent. Soc., 1875, p. 145), *mormon* being truly a *Strategus* in its thoracic modifications. North of the Mexican boundary in North America there are but two genera of this tribe, which is however represented by several additional genera in the tropical faunas; the former may be defined as follows:

Head as in the Pentodontids, without a corniform process in the male; mandibles strong, much exposed, tridentate; mentum evenly convex, generally strongly punctate and setose; prothorax with three erect horns in fully developed males; hind tibiæ sinuate externally at apex. [Type *Scarabæus aloeus* Linn.]. . . . . **Strategus**

Head with a strong erect horn in the male, the prothorax wholly unarmed in that sex; clypeus obtuse, reflexed and bilobed; mandibles much smaller, more conceded, feebly bilobed at tip; mentum deeply excavated at base; hind tibiæ not sinuate externally at tip, the flaring apex evenly truncate but distinctly crenulate. [Type *Geotrupes satyrus* Fabr.]. . . . . **Xyloryctes**

I regret that my arrangement of the Pentodontini forces me to place *Xyloryctes* after *Strategus*, for its female bears a very suggestive resemblance in many ways to the female of *Orizabus;* however, this is rather a minor point, for *Strategus* is still more closely allied to *Anastrategus* and *Bothynus*.

Strategus Hope.

The body in this genus is generally very large and heavy, though some of the less developed males of the *antæus* group become very

moderate in point of size. The head is of the usual very moderate size and coarse rugose sculpture, the clypeus finely pointed to broad and sinuato-truncate at tip, and the frontal ridge is obsolete or represented by two small and feeble tubercles. The mandibles are well developed and variably tridentate, frequently less strongly so in the female; the antennæ are of the usual 10-jointed type, with the 3-jointed club regular and not as in *Pentodon*. The pronotal cavity of the male is very large and deep, and the lateral extremities of its posterior margin are elevated into conspicuous corniform processes, which, in the less developed males, become nearly as in the female, where the cavity differs from that of *Anastrategus* in having its posterior margin abrupt and transversely crescentic, not continuous in any way with the lateral and anterior margins of the depression; the apical tubercle of all the preceding genera is here greatly extended upward in the fully developed males, especially those of the *antæus* group, forming a long curved horn, and the cavity is frequently devoid of all sculpture in the fully developed males, but in successively more depauperate individuals there is an increased invasion of the rugose sculpture so fully developed in the females. The pygidium is never much larger in the male than in the female, where the transverse convexity is often more developed, the entire plate being as in *Anastrategus;* the legs and slender hind tarsi, with undilated basal joint, are also as in that genus, and the post-coxal process of the prosternum is densely herissate with erect setæ as in *Ligyrus*. Our species are assignable to two groups, which, as in the case of *Anastrategus*, are essentially geographic, but in this case subgenerically different, as follows:

Body larger in size, more elongate and more convex, the cephalic tubercles evident; mandibular teeth very unequal and broadly rounded; two posterior horns of the prothorax generally shorter and broader, though sometimes as in the next group; external sinus of the posterior tibiæ with a single shorter tooth at the bottom and with two long setæ; sutural stria always deep and distinct.....Group I

Body smaller, much more abbreviated and less convex, the cephalic tubercles obsolete, the mandibular teeth high and prominent, less unequal among themselves in the female as a rule, the posterior pronotal horns more slender, the sutural stria of the elytra frequently obsolete, the external sinus of the hind tibiæ crenulate at the bottom and with more numerous and shorter setæ.....Group II

The first of these groups is represented by many species and subspecies from Louisiana to southern Brazil, while the second is confined

to the southern Atlantic parts of North America and the Antillean regions.

Group I.

Subgenus **Strategus** in sp.

All the species of this group occurring in the Sonoran and Central American faunas, excepting *jugurtha* Burm., are of the *aloeus* and *julianus* types, and they are rather more numerous than hitherto supposed. They are generally large, broadly oval and of a castaneous color, the head and prothorax usually of a darker tint, though a few females at hand are almost completely black above. They all have the clypeus rather broadly and angularly sinuate in the male, while in *jugurtha* it is acuminate, and in that species the posterior thoracic horns are longer and more slender, so that it does not belong properly to the *aloeus* section of the subgenus. The various species are as follows, the descriptions being from the male when at hand:

Basal joint of the hind tarsi broader than the following as usual and flattened, but subparallel and never having its external angle prolonged 2

Basal joint much shorter, more triangular, its external angle obliquely and strongly produced as in *Xyloryctes*, the body in general features harmonizing very closely with *julianus* 8

2—Hind tarsi moderately slender; mandibles (♀) with the middle tooth large, very obtusely rounded, occupying at least half the total length of the exposed part of the mandible and generally much more. . . . 3

Hind tarsi very slender distally; mandibles (♀) with the middle tooth relatively much smaller though rounded, occupying much less than half the total length; eyes more developed; body smaller in size. . . 7

3—Front with the usual two well separated tubercles 4

Front with two postero-inwardly oblique ridges, meeting at the anterior end of the punctureless median anterior prolongation of the basal smooth area of the head 6

4—Hind tarsi unusually long, as long as the tibiæ; pronotal ridge almost obsolete, barely traceable. Body (♂) large, very stout, oblong-oval, shining, black or nearly so, obscure castaneous beneath, the tarsi black; head nearly as in *julianus* but having the tubercles small, rounded, abrupt and more widely separated, the broadly and obliquely bilobed apex of the clypeus strongly upturned; middle tooth of the mandibles very large, high and rounded, larger than in *julianus;* prothorax nearly similar in form and sculpture, except that the rugosity extends unmodified entirely across the large cavity; apical process not binodose or but very finely and imperfectly; scutellum rugose, the margins smooth; elytra broader, barely longer than wide, rounded at apex behind the middle, the surface as in

julianus, the pygidium also similar, the hairs forming however a single broadly aggregated line at some distance from the base; metasternum wholly impunctate medially, even at the anterior margin, punctured broadly antero-laterally as usual; legs very stout, the anterior tibiæ with more strongly developed teeth, the uppermost small, however, as usual. Thoracic ridge lower than in *julianus*. Length 47.0–48.0 mm.; width 23.0–25.0 mm. Colombia to the Amazons. Two moderately developed males, taken at Para, Brazil, by C. F. Baker. . . . . *aloeus Linn.

Hind tarsi much shorter, not as long as the tibiæ, the legs rather less stout. 5

5—Body stout, oblong-oval, shining, piceous-black, the elytra and under surface much paler, castaneous-red; head nearly two-fifths as wide as the prothorax, the tubercles rounded, very widely separated, the clypeus not rugulose but with distinct and widely separated rounded punctures throughout, becoming smaller and closer at the sides, the middle mandibular tooth large, high and rounded; antennal club well developed, much longer than the six preceding joints, its first joint only moderately angularly prominent on the lower face at the middle, the anterior slope with dense erect hairs, which however are extremely short; prothorax two-fifths wider than long, fully as wide as the elytra and four-sevenths as long, the oblique sides toward apex broadly, feebly sinuate; cavity very smooth and polished throughout and without trace of a longitudinal ridge in about its posterior half; the entire surface of the pronotum is devoid of any trace of rugulosity, except the usual two transverse areas at base; posterior processes not so broad as in *julianus* and with their apices more oblique, at an angle of 45°, the apical horn evenly reflexo-arcuate, more than twice as long as the head, obliquely flattened at the sides and with the apex feebly binodulose; scutellum nearly smooth in about apical half and nearly to the base at the sides; elytra but very little longer than wide, nearly as in *julianus;* pygidium of the usual form, convexity, basal punctures and pubescence, without apical punctures in the type (♂); metasternum punctured and pubescent in less than anterior half, though, as usual, nearly to the base at the sides. Female longer but relatively less stout than the male, much larger than the female of *julianus*, with evidently more elongate prothorax, having the clypeus not simply punctate as in the male, but with separated asperate rugulosity, the apex as usual more narrowly truncate than in the male and with smaller and less elevated mandibular tooth. Elytra more elongate than in *julianus*. Length (♂ ♀) 43.0–45.0 mm.; width 22.0–23.5 mm. Texas. A single fully developed male from an unrecorded part of the state and two females, Named in honor of Theodore Roosevelt. . . . . **roosevelti** n. sp.

Body stouter, the female smaller than in *roosevelti*, black, with dark castaneous elytra to black throughout above, paler castaneous beneath, polished; head as in the preceding, and smooth at base except that the sparse punctures of the clypeus are replaced by moderate rugulosity, which is sometimes mingled with very minute sparse punctulation, the

apex similarly upturned, broad and biobliquely sinuate; antennal club not quite so large but similarly pubescent; prothorax about two-fifths wider than long, the oblique sides apically not or scarcely sinuate, the bottoms of the divided cavity and the external surface about the base of the short, very broad posterior processes, coarsely undulato-rugose; the elevated longitudinal ridge, which completely divides the cavity, is smooth but becomes more or less rugose on its posterior part in the moderately developed males, where the extent of thoracic rugulosity is more extended; in the least developed males all trace of this ridge is lost, the strongly rugose cavity being virtually as in the female, though with the apical horn distinctly longer; posterior processes about half the length of the arcuate apical horn; basal areas of rugosity rather large in all classes; scutellum very strongly rugose except broadly toward the sides and toward apex; elytra barely to distinctly longer than wide, about as wide as the prothorax—slightly wider in the less developed males—but much to slightly less than twice as long, rounded in about posterior half, smooth, with a few fine and feebly impressed lines and some feeble but distinct, rather coarse punctuation, especially laterad; pygidium nearly as in the preceding; metasternum variable in extent of punctuation. Female slightly narrower than the male, the prothorax smaller though less transverse and more distinctly narrower than the elytra, the cephalic tubercles generally more approximate as in the least developed males, the clypeal apex, however, is more narrowly truncate than in any male, and the rugulosity of the clypeus is stronger than in that sex. Length (11 ♂, 10 ♀) 34.0–47.0 mm.; width 18.0–24.5 mm. Mississippi (Vicksburg) to western Texas (El Paso) and southward to Central America. Abundant, the fully developed male rare..... **julianus** Burm.

6—Outline rather narrower, blackish, the prothorax nubilously rufescent at the sides, the elytra dark castaneous, the under surface bright rufous, shining; head rather small, about a third as wide as the prothorax, the rugosity strong and coarse, less strong and more transversely wavy on the clypeus, the minute intermingled punctulation obsolescent, the gradually strongly upturned apex broadly, biobliquely sinuate, the larger mandibular tooth rounded; antennal club very moderate; prothorax shorter than in *julianus*, three-sevenths wider than long, the oblique sides apically not only not sinuate, but scarcely straight, being just visibly arcuate; sculpture and cavity throughout as in *julianus*, except that for the same stage of development the longitudinal ridge is more obsolete, being very feeble, rather vague and as densely sculptured as the rest of the surface; in the type, the erect apical horn has its apex rather acute and not binodulose; scutellum with the usual very coarse anterior rugosity; elytra fully a sixth longer than wide, slightly wider than the prothorax and about twice as long, rounded in posterior half, the surface very smooth, without even a trace of fine impressed lines, the sutural stria distinct but not so coarse or deep as usual; pygidium as usual, the basal punctuation and pubescence rather dense, extending almost to the basal margin; posterior coxal plate

strongly, closely punctured throughout; mentum evenly and strongly convex, the punctures medially smaller and sparser than toward the sides. Length (♂) 34.0 mm.; width 17.2 mm. Honduras (San Pedro Sula). A single male, at or a little under the median stage of development..... ***frontalis** n. sp.

7—Body more oval and smaller in size than in any other of this section of the subgenus, convex, shining, pale castaneo-rufous above and beneath, the head and anterior parts of the pronotum more obscure; head larger, slightly less than one-half as wide as the prothorax, with somewhat larger eyes than in the female of *julianus* and others, they being separated by but little more than twice their own width, the rugosity dense, coarser basally, the base very evenly and transversely, abruptly smooth and polished; tubercles strong, rounded, separated by two-fifths the interocular width; clypeus narrowly truncate and feebly though abruptly reflexed at tip; mandibles with the two anterior teeth distinct, the posterior occupying nearly half the entire edge but only very feebly arcuate; antennal club as long as the preceding six joints; prothorax relatively smaller and especially shorter than in the allied species, one-half wider than long, the apical sinus broader and shallower than usual and nearly three-fifths as wide as the base, the outline, sculpture and impressions otherwise nearly as in the female of *julianus* and others; scutellum similar; elytra more oval, more strongly rounded in fully apical half, slightly longer than wide, almost a third wider than the prothorax and slightly more than twice as long, the nearly sculptureless surface as usual, except that, toward the sides, feebly defined series of very small punctures become evident; pygidium as usual, very short and transverse, strongly, transversely tumid submedially and punctured and pubescent above, the hairs very long and stiff; hind coxal plates sharply reflexed peripherally, near which the coarse separated punctures are replaced by fine, close, subscabriculate sculpture. Length (♀) 30.0 mm.; width 16.5 mm. Texas. A single specimen.

tarsalis n. sp.

8—Body oblong-suboval, stout, convex, shining, black, the elytra very dark castaneous, the under surface paler; head well developed, more than two-fifths as wide as the prothorax, the eyes separated by barely twice their width, the rugosity basally, as well as on the clypeus, consisting of widely separated small asperulate elevations; tubercles rounded, high, separated by one-half the interocular width; clypeal apex obtuse, nearly as broad as the distance between the tubercles and strongly, evenly arcuate, gradually and very moderately reflexed; mandibles externally nearly as in the female of *julianus*, the middle tooth a little higher; antennal club not as long as the preceding six joints; prothorax throughout nearly as in *julianus*, except that the oblique sides, before the rather narrowly rounded median arcuation, are broadly and feebly but more obviously sinuate; scutellum similar but more sharply ogival, with less arcuate sides; elytra as in *julianus* but broader, more than a fourth wider and four-fifths longer than the prothorax, rounded in less than apical half; pygidium of the usual form but with the transverse tumidity less

obtuse at the summit and nearer the base, the concave apical part with numerous strong punctures bearing long setæ, the apex truncate and broadly, flatly beaded medially; hind tarsi fully as long as the tibiæ, the joints after the first longer than usual, the second joint but very little shorter than the first; met-episterna with strong irregular imbricate sculpture throughout, not discretely punctured as they are in *julianus*. Length (♀) 42.5 mm.; width 21.2 mm. Panama (Culebra),—Gaillard. A single example*. . ***gaillardi** n. sp.

I found *julianus* attracted in abundance to the electric lights at Alexandria, Louisiana, on June 1, 1901, during some very hot weather. In the complete stage of the male in this genus the thoracic cavity is always smoother than in the incomplete stages, but in that species the rugulosity is, in the complete stage, always distinct and never entirely wanting as it is in *roosevelti*. Although the clypeus is always smoother in the complete male, the sexual difference in the sculpture of this part occurring in *roosevelti* is very remarkable and cannot be observed in any other species; in the incomplete stages of *julianus* (♂), the clypeal rugosity is about as strong and dense as in the female and identical in character, but it is much feebler in the fully developed stage of the male; in the female type of *gaillardi*, the sculpture of the entire surface of the head is peculiar, being in the form of small and widely separated, sharp elevations, and, in this species, the clypeal apex is much broader than in the female of *julianus* and the eyes much larger. In the type of *tarsalis*, the external sinus at the apex of the hind tibiæ is devoid of any trace of the usual medial tooth and there is but one long seta; I cannot discover any such departure from the normal among the other twelve species in my collection, the largest of which is the Brazilian *centaurus*, described by Kolbe, of which I have one female; the elytral punctures are strong and conspicuous in this species, obsolescent suturally and apically,

* In naming this species in honor of my old friend and corpsmate David Du Bose Gaillard, it affords me an opportunity to express my deep regret that he should have been denied the gratification of witnessing the completion of the great canal-cut at Culebra, which would have crowned so fittingly a life of exceptional usefulness to his country. Both Colonel Gaillard and his amiable wife, to whom he was devotedly attached, took a lively interest in nature from every point of view, and I owe many interesting specimens, casually found by them, to his thoughtfulness and generosity. Only a few weeks before the fatal illness came upon him he gave a delighted circle of friends, at the Cosmos Club in Washington, a most entertaining account of what he and others had accomplished on the Isthmus of Panama.

and there are three or four regular double series of more close-set punctures, the series completely unimpressed.

Group II.

Subgenus **Strategodes** nov.

The species of this subgenus can be distinguished at once from all those of *Strategus* proper by the smaller and broader, rather less convex body, higher and more slender mandibular teeth, more slender, generally much longer and more curved posterior horns of the prothorax, general absence of the sutural stria of the elytra and other features, giving to them a marked peculiarity of habitus. In the structure of the apex of the hind tibiæ the two groups are radically different; the crenulation of the external sinus sometimes becomes nearly obsolete, but in all cases the four stiff setæ remain in their full normal development. *Mormon* Burm., although a remarkably isolated species, is a member of this subgenus quite unmistakably, or else constitutes a special subgenus allied thereto, and why it should have been associated more particularly with *splendens*, which, excepting in the strong sutural stria, it resembles in scarcely any other than a superficial way, is not easy to understand. The species are rather numerous, those in my collection being as follows:

Elytra without a sutural stria, except at and near the apex; middle tooth of the mandibles differing sexually, moderately high and slender in the male, much shorter in the female. 2

Elytra with a coarse and deep entire sutural stria; middle tooth of the mandibles very long and slender and similar in the sexes. 8

2—Sides of the prothorax toward apex not or only very feebly sinuate. . 3

Sides deeply or at least very distinctly sinuate toward the apex, which is sometimes almost subtubularly produced. 7

3—Posterior thoracic horns widely diverging. Body large, oblong, polished, black, the elytra blackish-castaneous, the under surface paler, castaneo-rufous, the legs and tarsi slightly more obscure; head small, very coarsely, densely rugose, smooth at base, the tip of the clypeus smooth and with sparse punctures; front with a fine, feebly elevated, transverse and irregular raised line, not attaining the sides; clypeus at apex not reflexed, the apex broadly rounded, with a very acute reflexed median angulation; middle mandibular tooth about twice as high as wide, rounded at tip; antennal club not as long as the preceding six joints, the under face of its first joint evenly convex, not medially angulate as in the preceding subgenus; mentum convex, extremely coarsely punctate and subrugose, with

erect setæ; prothorax transverse, fully two-thirds wider than long, inflated and rounded at the sides, the latter very strongly oblique before the middle, becoming feebly sinuate to the apex, which is only two-fifths as wide as the base; apical horn long, strongly recurved toward apex, the tip very acute, abruptly flattened on its anterior face, finely and sparsely punctate, the two posterior horns feebly arcuate, slender, acutely pointed and two-thirds as long as the apical, having very minute sparse punctures throughout the general surface, which is completely devoid of rugosity, except at the sides near the base of the horns and very narrowly along the basal margin laterally; cavity smooth, polished, divided by a large convex ridge, forming a prolongation of the convex surface of the anterior horn; scutellum ogival, smooth, with coarse discrete punctures at base; elytra fully as wide as long and rounded in less than posterior half, as wide as the prothorax and three-fourths longer, smooth, with very minute sparse simple punctulation, having two or three discal and a sutural feebly impressed line, the sutural becoming a deep stria in apical third or fourth; side margins with a rather coarse smooth gutter, the flanks near the base with two submarginal impressions; pygidium less than three times as wide as long, very convex, subasperately punctate and with coarse hairs in about basal third; postcoxal plate with rounded external angle and irregularly scattered punctures; tibiæ spurs very large and long; hind tarsi shorter than the tibiæ, the basal joint slender, nearly three times as long as wide. Length (♂) 35.0 mm.; width 20.3 mm. Gulf states (locality unrecorded). A single fully developed example.....**divergens** n. sp.

Posterior thoracic horns in fully developed males parallel, though with the usual moderate even arcuation, always finely pointed at tip as in the preceding.....4

4—Upper surface of an intense highly polished black throughout, castaneous beneath, the anterior tibiæ blackish, notably broad, very strongly toothed, the fourth or uppermost tooth small as usual. Body stout, oblong; head small, much less than a third as wide as the prothorax and, as in the others, relatively smaller than in the preceding subgenus, coarsely rugose but shining, the front unmodified, except by some irregular swirling of the rugæ, the convex external slopes of the clypeal apex, which is not at all reflexed, sparsely punctate, the apex obtusely rounded, with a minute acute median denticle, the median mandibular tooth as in the preceding but more conical; mentum smoother medially; prothorax in form nearly as in the preceding and similarly sculptureless, except that there is no trace of the rugulosity at the basal margin, there being merely a feeble coarse impression along the basal bead near each side; apical horn still longer, more abruptly and strongly recurved apically, less punctured and more bilaterally compressed; posterior horns three-fourths as long as the apical; ridge dividing the concavity more sharply rounded than in *divergens;* there is similarly no trace of rugulosity within the concavity; scutellum nearly similar; elytra even shorter, scarcely as long as wide, barely as wide as the prothorax and but two-thirds longer, the surface similar, except that all discal impressed

lines are obsolete and that there are some very small feeble sparse pustules in addition to the minute punctulation; the punctures are very small, closer, distinct and simple at the apical margin and the sutural stria is evident only near the apex and even there fine, irregular and not at all groove-like; marginal gutter curving inward just behind the humeri; intra-humeral basal impression deep; pygidium very short, almost four times as wide as long, otherwise nearly similar; tarsi and the very conspicuous tibial spurs similar. Length (♂) 30.0–34.0 mm.; width 17.5–19.0 mm. Florida. One fully developed male and two in intermediate stage. . **atrolucens** n. sp.

Upper surface castaneous, sometimes blackish but only in the female so far as noted; anterior tibiæ moderately stout and dentate; pygidium less transverse, never quite three times as wide as long and sometimes much less, the upper margin, as in all the species except *mormon*, broadly and feebly sinuate medially somewhat as in *Bothynus* 5

5—Female with the anterior thoracic concavity more or less shallow, and smaller in size, scarcely ever extending so far posteriorly as the middle of the pronotum. Male, when fully developed, a little less stout than in the two preceding species, oblong, more elongate, polished, the anterior parts a little darker than the elytra and sometimes nearly black; head small, less than a third as wide as the prothorax, very coarsely rugose, the medial part of the clypeus with only a few sparse and feeble lineiform rugæ and some fine scattered punctures; lateral parts of the apex smooth, finely, not densely punctate, the apex broadly and obtusely rounded, not reflexed, with a small obtuse nodule at the middle; front with a medial vortex in the rugosity separating two very feeble, indefinite, irregularly rugose tumidities; middle mandibular tooth as in *atrolucens;* mentum rather smooth, with smaller sparse punctures medially; prothorax nearly as in *atrolucens* throughout, but less transverse, scarcely over one-half wider than long; apical horn similarly very long but with the apex rather less strongly reflexed, the posterior horns more broadly thickened gradually toward base; scutellum less transverse; elytra longer, fully as long as wide, fully as wide as the prothorax and nearly three-fourths longer, otherwise nearly similar but less broadly rounded behind; pygidium not quite three times as wide as long, convex and nearly similar to that of *atrolucens*, except that the confused basal punctures are smaller and the erect hairs much shorter and finer. Males in the less developed stages gradually decrease in size, the apical horn of the prothorax becomes much shorter and is finally but little more than a strongly elevated tubercle, though always at least a little larger than in the female, the posterior horns become very short, relatively broad and finally disappear completely, but the pronotum is never in any marked degree similar to that of the female, the concavity remaining relatively much larger; in the successively diminishing stages the thoracic concavity becomes more and more rugose and finally there remains barely a trace of the dividing ridge. Female very different from the male, darker in color, more broadly oblong and less convex, the head just visibly larger, less

obtuse at apex and gradually reflexed, sometimes subacute, the mandibular teeth shorter, the middle one not half as high as in the male; prothorax shorter than in the complete males but similar in outline to that of the incomplete males, coarsely rugose throughout anteriorly and with some rugosity very narrowly along the base laterally, the apical tubercle broadly triangular, with its tip binodose; oblique sides anteriorly not at all sinuate, with the apical angles much more obtuse; elytra shorter, rather wider than long; pygidium shorter, less convex and more extensively punctate, otherwise similar. Length and width of a complete male 31.7 by 18.0 mm., of the incomplete males 24.5–31.5 by 13.3–17.5 mm., of the female (more uniform in size) 27.0–30.0 by 14.8–17.3 mm. Florida and the Gulf coast to the westward. Eight ♂, five ♀. [*Geotrupes antæus* Fabr.]..... **antæus** Fabr.

Female with the anterior thoracic depression much larger and deeper..6

6—Male in the fully developed stage smaller and narrower than in *antæus*, shining, darker castaneous, paler beneath; head nearly similar, except that the middle mandibular tooth, though equally high, is more triangular, its base occupying all or nearly all the external edge behind the small apical tooth; obtuse clypeal apex with a small acute median denticle; prothorax much shorter, fully three-fifths wider than long, the oblique sides anteriorly more sinuate apically and nearly as much so as in *semistriatus;* cavity divided by the strongly elevated smooth ridge from the base of the anterior horn, which is shorter than in any other species, only feebly arcuate and barely at all longer than the posterior horns, which are not as long as in *antæus;* surface smooth but with coarse wavy rugulosity at the bottom of each of the lateral concavities, except on their posterior slopes, and also with a small external rugose area at the foot of the horns, also a very narrow area at base laterad; apex of the apical horn perfectly simple and subacute; scutellum finely, closely punctate at base, with some coarser punctures at the hind part of this basal area; elytra slightly longer than wide, smooth, the minute sparse punctulation intermingled with only very feebly elevated minute pustulosity, the fine punctures at apex closer and stronger than in *antæus;* pygidium smaller and shorter but otherwise similar. Female narrower than in *antæus*, dark castaneous to nearly black above; head nearly as in *antæus*, the clypeal apex even more broadly obtuse than in the male and without the median tooth; middle mandibular tooth nearly as in *antæus* but broader at base; prothorax nearly as in *antæus*, except that the depression is two-fifths the entire width, extending posteriorly evidently behind the middle, the apical tubercle with its apex not binodose; oblique sides toward apex similarly not sinuate but rather subarcuate, though with the apical angles less obtuse; elytra not quite so short as in *antæus*, the pygidium shorter and very transverse. Length (2 ♂, 3 ♀) 28.0–31.5 mm.; width 16.0–17.5 mm. North Carolina (Southern Pines),—Manee; also Alabama (Mobile)..... **pinorum** n. sp.

Male in the intermediate stage oblong-suboval, convex, shining, dark castaneous, ferruginous beneath; head rather more than a third as wide as the prothorax, nearly as in the preceding species, the very

obtusely rounded clypeal apex with a moderate median nodule; it differs, however, in having the median mandibular tooth broad at base and very much less elevated than usual, being in fact but little higher than the basal width; frontal ridge obscurely evident medially; antennal club shorter than in any other species; prothorax more than one-half wider than long, the longitudinally divided cavity limited postero-externally by obtuse elevations, the apical horn short but longer than the posterior prominences; each of the two cavities is rugose except posteriorly, but otherwise there is no trace of rugosity even at base, excepting occasionally a little on the outer slopes of the posterior processes; oblique sides anteriorly broadly and very feebly sinuate; scutellum smooth, punctured at the extreme base only; elytra nearly as wide as long, distinctly wider than the prothorax and three-fourths longer, the sides unusually arcuate, the apex rounded from the middle; surface smooth; pygidium not three times as wide as long, convex, punctured and with coarse hairs basally as usual, elsewhere with minute scattered punctulation. Female much smaller and narrower than in either of the two preceding species, oblong, moderately convex, castaneous; head nearly as in the male, the clypeus similarly broadly rounded at apex, but the mandibular teeth are still more reduced in size as usual; prothorax shorter, two-thirds wider than long, the oblique sides anteriorly straight, the cavity very deep, more abruptly defined posteriorly than in the preceding species, a third as wide as the disk and extending rather behind the middle, the tubercle very obtuse, not binodose; surface much less rugose than in either of the preceding, smooth, rugose in the cavity and thence more narrowly externally to the apical angles; along the basal bead there are some irregular punctures in approximately single line; elytra relatively much longer than in *antæus* or *pinorum*, distinctly longer than wide, equal in width to the prothorax and not quite twice as long, rounded behind the middle; pygidium very short and transverse. Length (4 ♂, 1 ♀) 24.0–26.0 mm.; width 12.8–14.8 mm. Length and width of the single female 24.8 by 13.8 mm. New Jersey..... **septentrionis** n. sp.

7—Male in the fully developed stage elongate, oblong-oval, narrower than in *antæus*, black, the elytra dark castaneo-rufous, the under surface paler; surface highly polished; head a third as wide as the prothorax, very coarsely, unevenly rugose, smooth at base, the region of the transverse ridge somewhat more convex, the clypeal apex throughout finely and sparsely punctate, not in the least reflexed even apically, the apex evenly, circularly rounded and, on the surface, having a short slender carina; middle mandibular tooth long, rather acuminate and almost twice as high as wide; prothorax a little more than one-half wider than long, the apex almost tubulate, half as wide as the base, the three horns unusually slender, the apical feebly, evenly arcuate and barely longer than the posterior; median smooth ridge as usual; surface completely smooth and polished, excepting a small area of rugosity at each side of the base of the apical horn and a very slight amount externally at the base of the posterior horns, also two or three punctures along the basal bead laterad; elytra barely longer

than wide, equal in width to the prothorax and two-thirds longer; sutural impressed line obsolete, the stria present at apex as a fine unimpressed irregular groove; surface minutely, sparsely punctate, and, except externally, having distinct though minute and feeble pustule-like elevations; pygidium rather more than three times as wide as long, very smooth, punctured basally as usual. Length (♂) 29.5 mm.; width 15.5 mm. Alabama (the locality not recorded).

sinuatus n. sp.

Male in fully developed stage larger and much broader than in *sinuatus*, being nearly as in *antœus* in size, color and lustre, the head not quite so large, between a third and fourth as wide as the prothorax, the surface and mandibular teeth nearly as in the latter species, except that there are more distinct vestiges of a transverse frontal ridge; prothorax much shorter, two-thirds wider than long, the sides more strongly inflated medially and, anteriorly, becoming much more oblique to the apical sinuation, which is very much more pronounced than in *antœus* but not quite so deep as in *sinuatus;* apex relatively narrower than in either and only two-fifths as wide as the base; horns long, slender and erect, proportioned as in *antœus*, the apical much longer than the posterior and strongly recurved toward the simple acute tip, the posterior erect but with the usual arcuation rather strong; longitudinal ridge similar; surface smooth and polished, rugose only at the sides of the base of the apical, and externally at the base of the posterior, horns, also with a moderate amount of rugulosity along the basal bead sublaterally; scutellum as usual; elytra fully as wide as the prothorax and three-fourths longer, barely longer than wide, rounded in posterior half, smooth, with minute sparse punctures, the feeble pustulation indistinct; sutural impressed line distinct throughout, becoming a deep and well defined stria in about apical half; pygidium short and broad, shorter than in *antœus* and with the upper margin more sinuate, approaching the contour seen in *Bothynus;* irregularly disposed punctures of the hind coxal plate fine. Length (♂) 33.0 mm.; width 18.0 mm. Texas.

semistriatus n. sp.

8—Male oblong-oval, rather convex, polished, bright castaneous, the under surface not much paler; head two-fifths as wide as the prothorax, very short, having discrete punctures, sparse along the middle, closer laterally and, in a large dense patch at each side of the vertex, bearing stiff erect setæ; clypeus short, with very oblique and deeply sinuate sides, the apex very acute and distinctly reflexed; middle mandibular tooth broad at base but, about half way up, becoming very slender and thence gradually pointed, the anterior tooth much shorter but also narrower than usual; anterior canthus of the eye unusually large and prominent though obtuse; prothorax short, three-fifths wider than long, the oblique sides anteriorly straight, not at all sinuate; cavity large and deep, half as wide as the pronotum and extending to basal two-fifths, punctureless but without a longitudinal ridge medially, the postero-lateral processes very short, subcariniform, the apical triangular and elevated, very acute at apex; surface with coarse shallow punctures in the depression,

except medially, the punctures extending obliquely to the apical angles and thence along the sides to the base; apical bead very wide at the apical angles; scutellum with the basal punctures setose; elytra barely longer than wide, a little wider than the prothorax and very nearly twice as long, rounded in posterior half, having feeble traces of geminate series of fine punctures, the sutural stria deep and entire; pygidium scarcely more than twice as wide as long, very evenly and strongly convex, perfectly smooth, punctured and setose near the base, the basal line evenly arcuate from side to side; hind tarsi very slender, rather longer than the tibiæ. Female larger and stouter than the male; head larger but otherwise as in the male throughout, including the mandibles and setæ of the vertex, but more densely and coarsely punctato-rugose throughout, the base smooth; prothorax more transverse, the anterior oblique sides similar; surface coarsely rugose in about apical, smooth in basal, half, and with a simple, transversely oval, not very deep anterior concavity, a third the total width and extending to the middle; apical tubercle shorter and more obtuse than in the male and binodulose; scutellum very concave and rugose in basal half, except at the margins; elytra oblong, barely longer than wide, rounded in less than apical half, barely wider than the prothorax and not quite twice as long; pygidium much shorter and more transverse but similarly with arcuate upper margin, strongly convex in upper, concave in lower, half; hind tarsi thicker and relatively shorter than in the male. Length (♂) 24.5, (♀) 26.0 mm.; width (♂) 14.5, (♀) 16.2 mm. Kansas (Medora). A single pair of this very rare species was kindly sent to me by Mr. Knaus. [? *bosci* Beauv.].....**mormon** Burm.

As is frequently the case among the Coleoptera, the female in this genus serves much better in the definition of the species than the male; in the latter sex there is a very large amount of intraspecific diversification, but it may be remarked in passing that the least developed form resembles the female much less closely than it does in the preceding subgenus, there always being a pronounced sexual difference in the form of the pronotal cavity, even when there is no trace of the posterior processes. The female, on the other hand, is virtually constant, not only in size and outline but in the conformation of the thoracic impression, and this differs unmistakably in all those species of which the female is known, as in *antæus*, *pinorum* and *septentrionis*, described above. *Maimon* Fabr., is said by Burmeister to be a variety, or in greater likelihood the depauperate stage, of the Antillean *syphax* Fabr.; so it can be disregarded in discussing our American forms. *Bosci* Beauv., is said to be the same as *mormon* Burm., by the Munich catalogue, but, in view of the difference in habitat, *bosci* having been described as

Carolinian, I have attached it to *mormon*, with an expression of doubt; it may really be merely a *splendens* having an unusually acute clypeal apex, there being some variability in this respect, as well as in other directions, in all the species. Both this name and *maimon* should be dropped from the literature, as the descriptions are completely indefinite and useless. There might be some propriety in the suggestion of subgeneric isolation for *mormon*, because of the peculiarly long and slender mandibular tooth, setose patches on the vertex and radically different pygidium, especially in the male. Whether or not the male specimen described above is a depauperate form, the complete stage having long thoracic horns, I am unable to state.

Examining carefully the surface of the elytra, for instance in *atrolucens*, quite a complex sculpture is revealed in what appears at first glance to be a perfectly smooth polished surface. In the first place, we have very minute sparse simple punctures, then, scattered among these punctules there is a sparse system of very small feeble pustules, wholly disconnected with any kind of punctuation, and, thirdly, over the entire surface, between the sparse pustules and minute perforate punctules, there is close-set, extremely minute and feeble pustulation, which is also not connected in any way with apparent punctures.*

Xyloryctes Hope.

This genus is entirely isolated in our fauna and does not bear any resemblance whatever to *Strategus* and allied genera, which,

* Since this revision of *Strategus* was written, I have received a paper by Mr. Charles Schaeffer (Journ. N. Y. Ent. Soc., 1915, p. 47), in which appears the following paragraph on page 51:

"**Strategus julianus** var. **arizonicus** new variety.

"Two fully developed male specimens from Prescott, Arizona, in my collection, differ from specimens from Texas by having the lateral prothoracic horns acute or subacute, and not broad and more or less obliquely truncate at apex as in typical *julianus;* the median ridge of prothorax is flatter and the lateral impressions are not as deep as in typical *julianus* and feebly or not at all rugose; the clypeus is acutely, triangularly emarginate. The female does not differ from typical *julianus*."

If it were not for the emarginate clypeus, I should say that this form might be allied to *jugurtha* Burm., which also has slender thoracic processes. It is apparently not closely allied to anything here described. In some respects it agrees with the Texas species above described under the name *roosevelti*, but there the apex of the clypeus is very obtuse and feebly sinuato-truncate, and I think if the surface of the clypeus were as finely and sparsely punctate as it is in *roosevelti*, this feature would surely have been mentioned.

together with *Bothynus*, might very well constitute a distinct tribal group by themselves. Here, the head has an obtuse apex having a bilobed transverse erect plate as in *Orizabus*, except that the plate is apical and not post-apical, and the vertex in the male bears a long erect horn, which is reduced to a small tubercle in the female. The thoracic modifications are also of an entirely different kind, there being an abrupt slope in about apical half in the male, but without any indication of corniform processes; in the female, the pronotum is perfectly even, again as in *Orizabus*. The small lamellate, almost completely hidden, externally obtuse and non-dentate mandibles are also nearly as in *Orizabus*, and in fact there is a markedly close affinity between these two genera. So great is this resemblance that it is small wonder that the female should have been described recently as a female *Orizabus*, especially as the hind legs, excepting the feeble apical crenulation, the hind tarsi, with their obliquely extended basal joint and the tridentate anterior tibiæ are almost exactly as in that genus. The very deep concavity at the base of the mentum is however a conspicuous distinguishing character in *Xyloryctes*. The pygidium does not differ much sexually, but in the male there is usually visible a small tubercular swelling, just above the centre of the disk, that is never seen in the female; the upper marginal line is always arcuate in both sexes. The propygidium is covered throughout with small close-set subasperate punctures and the transverse strigilation of the Strategid genera is not observable; stridulation is therefore presumably much less strenuous in *Xyloryctes* than in *Strategus*, if it exists at all. *Xyloryctes* leads almost directly through *Heterogomphus* from *Orizabus* to the more typical Oryctids, and through *Orizabus* and *Aphonus* to the typical Pentodontids, showing rather conclusively that there is no marked distinction in real physiological structure between these two tribes. As in *Orizabus*, there is in *Xyloryctes* no progressive series of degradational forms in the male, as there is in *Strategus*, that sex being as constant in general form as the female, except that the cephalic horn varies somewhat in length and thickness, though not to very marked degree. The species are moderately numerous, those represented before me being the following:

Pygidium (♂) shorter, strongly transverse, having numerous rather close-set fine punctures throughout.....2

Pygidium (♂) much less transverse, more polished and with minute sparse punctulation.....3

2—Form very stout, oblong, strongly convex, shining and deep black, the under surface obscure castaneous. Male with the head fully a third as wide as the prothorax, the base of the clypeus extended upward, forming a gradually attenuated and slightly arcuate horn, nearly twice as long as the head and with moderate close-set punctures, like the concave surface of the trapezoidal clypeus before it, the clypeal apex reflexed in a high transverse bilobed plate, with its sides subparallel; eyes very moderate, the canthus not at all prominent; antennal club slender, as long as the preceding six joints; prothorax three-fourths wider than long, widest rather before the middle, the sides rounded, becoming very oblique, faintly subsinuate and more conspicuously fimbriate apically, the apex transverse, with a very broad flat bead, which is sometimes posteriorly angulate and produced medially, less than half as wide as the base, which is very strongly beaded; surface smooth, abruptly declivous at a right angle before the middle viewed from above, the flattened or feebly concave surface thence gradually less steep to the apex, transversely oval, coarsely punctato-rugulose and not extending to the sides, the rugosity however extending to the sides, the edge of the declivity at the middle faintly tumid and usually very slightly bilobate; scutellum perfectly smooth; elytra short, about as wide as long, as wide as the prothorax, parallel, abruptly, very obtusely rounded at apex, having widely separated, coarsely impressed lines, bearing moderate, shallow, posteriorly open annuli; punctures broadly confused on the second interval basally; pygidium not quite three times as wide as long, wholly glabrous, moderately convex, slightly inflexed in plane, the small umbo behind basal third; under surface with long dense conspicuous and rusty-brown vestiture, sparse on the abdomen. Female narrower than the male, the head more closely punctate, the clypeus but little wider than long, pentagonal, feebly impressed toward the sides, with bilobed apical carina as in the male but smaller and with a strong polished tubercle at the posterior angle, on a line through the middle of the eyes and very remote from the apex; prothorax less transverse, with more evenly rounded sides, which are generally feebly sinuate near the base and slightly narrower than the elytra, the surface smooth, gradually and very moderately though variably punctate anteriorly, more strongly toward the angles; elytra slightly elongate, rounded in posterior two-fifths, being much less obtuse than in the male though similarly strongly sculptured; pygidium still more transverse, less convex and with the even punctuation throughout stronger. Length (11 ♂, 3 ♀) 25.0–29.0 mm.; width 14.7–16.5 mm. New York to Texas. At times abundantly attracted to the electric lights. [*Geotrupes satyrus* Fabr.; ? *Cheiroplatys verticalis* Fall (♀)].....**satyrus** Fabr.

Form much less stout, smaller in size, similar in coloration, lustre, thoracic fimbriæ and pubescence beneath. Male with the head fully a third as wide as the prothorax, as in *satyrus* but with the horn

shorter, more rapidly and acutely acuminate and but little longer than the head, the apical bilobed carina nearly similar; antennal club but little shorter than the entire stem, though shorter than in *satyrus*, the joints of the stem much shorter; prothorax throughout nearly as in *satyrus*, except that the abrupt slope begins only a little before the middle, viewed from above, with the sculpture of the concavity finer and sparser, the punctures along the sides and the dense rugosity antero-laterad also nearly similar; elytra as in *satyrus* but with the striæ less coarse and very much more feebly impressed; pygidium shorter, more than three times as wide as long, the punctures similarly distinct and close-set throughout but mingled with very minute punctules. Female not narrower and almost similar in outline to the male, the head nearly as in the female of *satyrus;* prothorax also nearly as in that species and similarly with very strong entire basal bead; elytra similar, except that they are not evidently wider than the prothorax, the coarse striæ and general sculpture very much stronger than in the male; pygidium nearly as in the male but less convex and without evident intermingled punctulation. Length (1 ♂, 2 ♀) 22.8–24.5 mm.; width 13.3–13.7 mm. Region about Lake Michigan and Lake Superior.

lacustris n. sp.

A—Similar to *lacustris* (♂) but with a shorter prothorax, broader, more posteriorly inflated elytra, on which the sculpture is still feebler and gradually still more obsolescent posteriorly, and with a very slender cephalic horn; the sides of the prothorax are more broadly and evenly arcuate behind the apical obliquity and the base is broadly, feebly arcuate, becoming gradually sinuate sublaterally, while in *lacustris* it is simply gradually, moderately and more narrowly lobed medially; pygidium as in *lacustris*. Length (♂) 24.5 mm.; width 14.5 mm. A single example from an unrecorded locality, but probably from Nebraska.

tenuicornutus n. subsp.

3—Last palpal joint securiform, rapidly narrowed toward base on the inside and, at base, only half as wide as at the middle. Body narrower and more elongate than in *satyrus* and rather less convex, deep black, shining, rufo-ferruginous beneath. Male with the head rather more than a third as wide as the prothorax, everywhere coarsely and densely punctato-rugose, the apical carina bilobed, parallel at the sides, the horn short, not very thick at base, acute and only slightly longer than the head, rugosely sculptured except apically; prothorax narrower than in *satyrus* and with the steep slope beginning but little beyond the middle of the length, viewed vertically, its margin slightly protuberant at the middle but evenly rounded, not in the least bilobate, the concavity deeper than in *satyrus* but otherwise nearly similar; base transverse, barely at all arcuate, the bead thick and very strong throughout; elytra slightly longer than wide, equal in width to the prothorax and three-fourths longer, rounded in apical two-fifths, the sculpture superficial, consisting of scarcely at all impressed and rather fine series of moderate, posteriorly open annuli, confused medially on the second

interval toward base; pygidium subevenly convex, two and a third times as wide as long, minutely, remotely punctulate, less sparsely and more distinctly near the base, the minute umbo very indistinct. Female not narrower but longer than the male, the head rather shorter, the tubercle as in *satyrus*, the prothorax much less transverse than in that species, not quite one-half wider than long and with more strongly and subevenly arcuate sides, the sculpture fine, feeble, becoming dense and rugose toward the apical angles; basal bead very thick and strong but abruptly and completely interrupted for a very short distance at the middle; elytra large, much longer than wide and slightly wider than the prothorax, the sculpture scarcely stronger than in the male; pygidium shorter than in that sex and not quite so convex, finely, rather loosely but distinctly punctate, the punctures becoming gradually coarse and deep but not closer basally. Length (1 ♂, 2 ♀) 28.5–30.0 mm.; width 15.0–15.5 mm. Arizona (probably southern) ..... **faunus** Csy.

Last palpal joint much more slender, but feebly inflated internally behind the middle 4

4—Male oblong-oval, strongly convex and polished, dark castaneous, scarcely at all paler beneath; head distinctly more than a third as wide as the prothorax, moderately rugose, shining, the reflexed apex strongly bilobed, the horn stouter than in any other species, its base occupying more than half the entire width and extending to within a short distance of the clypeal apex, narrowed gradually, then more rapidly, finely pointed at tip, strongly arcuate but only a very little longer than the head; anterior canthus of the eyes short, broadly sublongitudinally and feebly sinuate and with the usual very dense and conspicuous fringe; prothorax a little more than one-half wider than long, throughout nearly as in *satyrus*, the projection from the middle of the upper margin of the cavity broader and broadly bilobed; elytra fully as long as wide, barely visibly wider than the prothorax and four-fifths longer, viewed from above, rounded evenly in almost apical half; sculpture feeble and superficial, consisting of series of small open annuli, the series broadly but only very feebly impressed, the annuli confluent in the sutural series but, on the disk, becoming obsolete posteriorly; pygidium nearly two and one-half times as wide as long, as usual more convex basally than apically, the minute umbo extremely feeble; punctures minute and sparse throughout, becoming confluent and rugulose at the extreme lateral ends. Female unknown. Length (♂) 23.5 mm.; width 14.0 mm. Wisconsin ..... **obsolescens** n. sp.

Male very short and stout, oblong, not very shining, obscure castaneous, barely paler beneath; head small, loosely rugulose, the apical carina deeply bilobed as usual; horn broad at base, rapidly and evenly tapering, very acute at tip, feebly arcuate and nearly one-half longer than the head; base of the clypeus forming a prominent projection at the sides, the eye-canthus thence posteriorly oblique, straight and much less prominent, being very different from that of the preceding species in this respect, as the clypeal base is there retracted at the sides, the sinuate canthus being more prominent;

prothorax of the same general form and sculpture as in *satyrus*, the basal bead very strong and entire; elytra short, scarcely as long as wide, slightly inflated posteriorly, where they are distinctly wider than the prothorax; apex rather abruptly, very obtusely rounded, not at all as in the preceding, the sculpture consisting of widely but shallowly impressed lines of small open annuli, those of the sutural series larger and in mutual contact; pygidium but little over twice as wide as long, strongly convex, more so above than below the middle as usual, the minute umbo scarcely traceable; punctures fine, very sparse, becoming but little less sparse basally. Female much larger than the male, deep polished black, piceo-castaneous beneath; head very much smaller than in *satyrus*, not quite a third as wide as the prothorax, closely punctate and rugulose, the sides of the trapezoidal clypeus rather high, thin and reflexed, the reflexed apical carina bilobed, the sides diverging to the base; tubercle between the eyes high and very acute; prothorax in outline nearly as in the male but smooth and even, the sparse punctures obsolete medio-basally, becoming very coarse and closer toward the sides and, antero-laterad, coarse, dense and rugose; basal bead strong laterally but more feebly defined medially, where the groove is frequently merely a confused line of small punctures, the interruption of the beading virtually complete; elytra but little longer than wide, very feebly inflated posteriorly, very slightly wider than the prothorax, rapidly rounded in about apical third, the sculpture as in the male, but the lines of annuli, though more narrowly and sharply impressed, are only very feebly so; pygidium polished, less but more evenly convex than in the male and with a distinct impression along the middle of each oblique lower side; punctures very fine and extremely sparse, a little more distinct near the base. Length (♂) 23.5, (♀) 25.5–26.0 mm.; width (♂) 14.2, (♀) 14.7–15.5 mm. New Mexico (Fort Wingate). A single male and two females, one of the latter being the type.

hebes n. sp.

I have attached *verticalis* Fall (*Cheiroplatys*) doubtfully to *satyrus*, not knowing any more appropriate place for it, but, as the length is given as 22 to 23 mm., and the width about 13 mm., it can be seen at once that it is materially smaller and may represent a perfectly distinct species, of which little can be said, however, until the male is discovered, for the short original description (Can. Ent., 1905, p. 272) alludes definitely to no character which could be useful in discriminating it among other species of *Xyloryctes*, being designed merely to differentiate it from *Orizabus clunalis*; the two typical examples were taken at Las Vegas, New Mexico. It cannot be the same as *hebes*, from Fort Wingate, as this also is much larger and the female differs besides in having the basal thoracic bead broken or subinterrupted medially; it is particularly

stated to be very strong and almost equal throughout the width in *verticalis*.

Tribe DYNASTINI

Not very abundant in either genera or species, this tribe includes probably the largest or at least the heaviest forms of Coleoptera known in the world. As a tribe it is distinguished from the Oryctini principally by the form of the tarsi, which have a peculiarly long and rather thick, yet filiform subglabrous appearance, with relatively smaller and undilated basal joint, which form of tarsi is shared also by the Agaocephalinæ. The prothorax of the male generally has a corniform process, but without excavation before the process as in the Oryctini and, in the female, the pronotum is invariably even in convexity, but this is not wholly distinctive of the Dynastini, as in *Xyloryctes*, of the Oryctini, the pronotum of the female is similarly unmodified and in *Anoplognatho* it is unmodified in either sex. The mentum is rather flat, broadly suboval, the labial palpi normally inserted at the sides of the narrowed ligular part of the plate, the maxillary galea simple and subcylindric and the mandibles strong and considerably exposed, generally bidentate. Omitting some genera, such as *Golofa*, *Podischnus* and *Cœlosis*, which latter is a Dynastid and not an Oryctid, we can separate the American genera, having two lateral spines on the male pronotum in addition to the central horn, as follows:

Post-coxal process of the prosternum large, triangular; central horn of the male pronotum usually long, the lateral spines protruding from the surface near the base of the horn, or from the sides of the horn itself, the cephalic horn long, curving upward toward the thoracic horn; mandibles sharply bidentate; anterior legs differing but little in the sexes, the tibiæ tridentate externally, more finely and acutely in the male. [Type *Scarabæus hercules* Linn.]..... **Dynastes**

Post-coxal process very feeble to obsolete, spiniform; processes of the male pronotum very widely separated, at the sides of the apex; maxillary galea generally more acuminate but similarly simple; mandibles bidentate; prothorax with the central process small or wanting, that of the head well developed, bifurcate at tip as a rule; body more broadly massive..... 2

2—Body very large in size; anterior legs distinctly modified sexually, the anterior tibiæ much longer and more arcuate in the male, the long cephalic horn in the latter sex generally with a large dorsal anteriorly projecting process, the prothorax without a well defined central process, though obtusely tumid; pronotum with a strong polished entire basal bead in both sexes. [Type *Scarabæus elephas* Oliv.]

***Megasoma**

Body much smaller, the anterior legs not distinctly modified sexually; cephalic horn of the male without trace of a basal dorsal process, the prothorax with a short anteriorly projecting central process, which is briefly bifurcate; pronotum without a basal bead in the female, except very near the lateral angles and with only a feebly defined beading in the male. [Type *Megasoma thersites* Lec.]. . **Megasominus**

I am unable to say whether the moderately large Brazilian *Scarabæus hector* of Gory might enter the genus *Megasominus* or not, the probabilities being however against it, because of the widely distant and wholly disconnected habitats. The genus *Megasoma* Kirby, as at present constituted, is rather composite and several genera are included under that name, though in some cases not separable by any very radical differential characters; perhaps general habitus is among these one of the more important.

Dynastes Kirby.

The maxillary galea in *hercules* is said by Burmeister to have several small denticles, but so far as observable in my specimens, without dissection, it seems to be simple and acutely pointed at apex in that species; the thoracic horn of the male is often very long, fully as long or longer than the entire body, and the lateral thoracic spines are placed on its sides at or near basal third of its length. In the Mexican *hyllus* Chev., and our common *tityus*, however, the horn is very much shorter and the spines are on the pronotal surface very near its base. The pygidium in the male is sometimes so retracted in plane as to appear as one of the ventral segments when viewed from beneath. We have two species and one apparent subspecies as follows:

Thoracic process very short, never distinctly longer and often much shorter than the length of the prothorax, attenuate toward the apex, which is angularly notched but not expanded or otherwise modified. Body very stout, oblong-oval, very convex, shining, the male pale greenish-gray above, mottled on the elytra with spots of blackish-piceous, smaller or larger in size and often confluent, sometimes having a somewhat confusedly serial arrangement, the head, medio-apical part of the prothorax and thoracic processes black; under surface very dark castaneous throughout; head three-sevenths as wide as the prothorax, punctulate, the clypeus trapezoidal, with moderately narrow, unreflexed and sinuato-truncate apex and rounded angles, its surface in great part occupied by the base of the erect and somewhat posteriorly arcuate, acutely pointed horn, which is scarcely one-half longer than the head and almost exactly

equal in length to the anteriorly projecting, arcuate and inferiorly pubescent thoracic horn; eyes well developed; prothorax one-half wider than long, the sides rounded, gradually becoming oblique and straight anteriorly; surface smooth, punctured slightly near all the edges, the basal bead strong and entire; spicules small and very acute; elytra a sixth longer than wide, rounded in not quite apical half, about a sixth wider than the prothorax and twice as long, smooth but with a few sparse punctures antero-internally and some fine punctulation at the apices; pygidium transversely ridged and closely pubescent in basal fourth, the surface thence to the tip inflexed at about 45°, not concave and finely, closely punctate; hind tarsi much longer than the tibiæ. Female in general outline nearly as in the male but not quite so stout and generally rather darker in ground color, the pronotum black, with feeble paler mottling; head black, similar in size and form but much more coarsely and densely rugose, the clypeal apex much narrower, feebly reflexed and slightly bilobate, the horn of the male reduced to a small but strong tubercle at the exact centre of the cephalic surface; prothorax two-thirds wider than long, in outline as in the male but with the surface evenly convex and much more strongly sculptured, the punctures coarse and close anteriorly, smaller and sparse posteriorly; elytra fully a fifth longer than wide, a fourth wider than the prothorax and much more than twice as long, smooth but with very coarse, feebly impressed punctures internally and basally, each puncture generally having also a cluster of minute punctures, forming a very remarkable type of sculpture; pygidium shorter and more transverse, more acutely and strongly, transversely ridged barely above the middle, having long pubescence basally, the surface below the ridge concave, glabrous, shining, coarsely and rather loosely punctate, the general plane of the pygidium vertical; propygidium with small dense asperate punctures throughout; hind tarsi barely longer than the tibiæ. Length (♂ ♀) 32.0–47.0 mm.; width 18.0–26.0 mm. Indiana, Texas, Alabama and Florida. Abundant. [*Scarabæus tityus* Linn.] ..... **tityus** Linn.

Thoracic process longer, similarly pubescent beneath but distinctly longer than the prothorax, with its strongly bifurcate apex gradually and feebly expanded, the upwardly strongly arcuate cephalic horn also much longer and with a sharp denticle internally at a fourth to sixth from the tip; in *tityus* there is a very obtuse projection very near the tip, which however is generally indistinct and often obsolete; bilobed clypeal apex broader and more reflexed; prothorax much less transverse, only about a fifth wider than long, the sides obliquely converging and nearly straight anteriorly from a point more posterior; surface still smoother, the small spinules nearer the base of the horn than in *tityus;* elytra shorter, but very slightly longer than wide, similarly rounded behind and pale, with similar dark mottling, except that the spots are more irregular and have no evident tendency to linear arrangement; surface smooth throughout; pygidium as in *tityus*, except that the lower inflexed part of the surface is polished and smooth, punctured sublaterally and very densely and

coarsely toward the sides. Length (♂), from the end of the clypeus, 45.0–50.0 mm.; width 23.5–27.6 mm. Arizona.....**granti** Horn

A form was described recently by Sternberg (Stett. Ent. Zeit., 1910, p. 26), from Texas, as a subspecies of *tityus* under the name *corniger*; while this is unknown to me, I do not think that it can be a depauperate male of *tityus*, as the thoracic spicules have there exactly the same relative position as in the normal *tityus*, while in *corniger* they seem to differ somewhat in that respect. The female appears to be rather less common than the male in *tityus* and probably also in *granti*. *Tityus* exudes a very strong odor, not particularly disagreeable but pervasive, and I am told that the odor from a tree fairly loaded with the beetles, is sometimes carried by the wind for nearly a mile. *Granti* bears no close relationship to *hyllus*, the latter being much more closely allied to *tityus* than it is to *granti*, except that the thoracic spicules of the male are placed near the base of the horn as in the latter species and are not more remote from the base of the horn as they are in *tityus*.

Megasominus n. gen.

There is but little to add to the short diagnosis given above, other than to state that there is a marked difference in habitus between the *Megasoma thersites* of LeConte, and the more gigantic *elephas*, which besides inhabits a very different zoological region; the pubescence is also of a very different kind, being long, subdecumbent and hair-like and not very short, dense and velvety as in that species; the type may be described as follows:

Male oblong, convex, black, slightly shining, the under surface and legs also black or blackish; pubescence pale yellowish-gray, dense, very sparse or wanting on the medial and antero-laterad parts of the pronotum, and on the head except behind the horn, dense and still longer on the under surface, but less dense and more irregular on the abdomen and under surfaces of the femora; head two-fifths as wide as the prothorax, with prominent, posteriorly plectrate eye-canthus, the eyes very moderate, not at all prominent; punctures fine, rather close, the surface shining; clypeus short, feebly trapezoidal, with the sides feebly arcuate, much thicker vertically toward apex than basally, the apex broadly sinuate, the erect tubercle at each angle strong, the transverse elevated line near the apex distinct; labrum with a dense yellow fringe throughout the width; horn twice as long as the head, erect, strongly, evenly arcuate backward, its apex gradually wider and strongly, slenderly bifurcate; from the

base of the horn extends a straight strong ridge on each side to the middle of the clypeal sides, the lateral part of the clypeal suture fine but distinct, slightly tumid, extending obliquely backward from the foot of the horn to the inner part of the eye-canthus; upper surface of the horn basally prominently convex, but even and without trace of tubercle; prothorax three-fourths wider than long, widest just behind the middle, where the sides are prominent and broadly, bluntly angulate, thence oblique and barely arcuate to base and to the strong porrect and acutely angulate process projecting somewhat outwardly from each apical angle, the apical margin between the spines feebly arcuate, with the broad flat margin angularly prolonged posteriorly at the middle; surface finely, closely and irregularly punctate, becoming smooth and sparsely punctate on the shining slope before the central process, which is short, curving forward, parallel-sided, evenly bifid but not enlarged at tip, not as long as the head, with its upper surface canaliculate throughout and the concave slope immediately below it with a denser patch of longer hair, extending almost to the apex; scutellum well developed, rather wider than long, ogival, flat, smooth, glabrous and minutely, obsoletely punctulate, with a few scattered coarse punctures basally, which bear long decumbent hairs; elytra an eighth to fifth longer than wide, parallel, a fifth or more wider than the prothorax and two and one-half times as long, parallel, feebly inflated behind and rounded obtusely in posterior third, finely, not densely punctate and pubescent throughout, and with distinct traces of three oblique double sets of impressed lines; pygidium transverse, vertical, evenly and rather strongly convex, densely pubescent throughout; tarsi all much longer than the tibiæ but especially the intermediate as usual.

Female smaller, narrower and more oval than the male, the pubescence sparser and nearly wanting on the pronotum, except a few hairs toward the sides and also almost wanting on the elytra basally and sparse elsewhere, dense on the under surface but wanting on the abdomen medially and on the lower surface of the femora, excepting the usual upper and discal fringes; head rather smaller, finely, densely sculptured, smooth at the base medially; sides of the apically more contracted clypeus much more arcuate and nearly parallel basally, the apical tubercles equally strong but not so distant, the centre of the surface without a process but with a short transverse ridge; prothorax barely three-fifths wider than long, the sides prominent submedially, the feebly sinuate apex a little more than half as wide as the base; surface evenly convex and with very coarse deep and rather close-set punctures, becoming irregularly sparse basally; scutellum as in the male; elytra a fifth longer than wide, nearly similar in proportions though rather more inflated behind and with sparse, coarser punctures, becoming very coarse suturally; pygidium smaller, transversely ridged just above the middle, sparsely punctured and pubescent basally, the lower part concave, scabrous and with sparse erect hairs; last three ventral segments increasing very rapidly in length; tarsi all longer than the tibiæ.

Length (♂) 32.0–38.0 mm., (♀) 30.0 mm.; width (♂) 18.3–20.0, (♀) 16.7 mm. Lower California (Santa Rosa). [*Megasoma thersites* Lec.] ..... **thersites** Lec.

I know nothing concerning the life habits or food plant of this remarkable species, of which a full résumé of characters is given above, as it has never been adequately described; it will be noted that the differences between the male and female are parallel to those distinguishing the sexes in *elephas*, which is the only other species of the *Megasoma* group inhabiting the continent of North America.

Tribe PHILEURINI.

The general habitus of the numerous genera and species in this tribe is quite distinct from that of any other Dynastid group and recalls the Passalidæ in many external features and, as in the Passalids, the cephalic and pronotal horns and tubercles are frequently not more than very slightly different sexually; in addition to this peculiarity of facies and sexual constancy, the labial palpi are inserted on the under surface of the ligular plate, in a manner different from that occurring elsewhere in the subfamily; so, altogether, it can be said without much risk of contradiction, that the Phileurini are the most isolated section of the Dynastinæ; they do not seem to be Dynastids at all, in fact, and might constitute a distinct subfamily. The body is generally oblong, unusually depressed—again as in the Passalids and the result of similar life habits in all probability,—with very thick and dense, generally polished, black and strongly sculptured subglabrous integuments, and the head is generally bicorniculate or bituberculate, though quite different in the remarkable *Phileurus cribrosus* of LeConte, which has recently and very justly been made the type of a distinct genus. We have two genera as follows:

Hind tibiæ obliquely spiniform externally at apex; head with two posteriorly diverging ridges, sometimes subobliterated by the corniform processes, never with transverse ridge; second strial interval of the elytra broader basally and bearing detached punctures, sometimes however very few in number or accidentally wanting; body more elongate-oblong in form. [Type *Scarabæus didymus* Linn.] **Phileurus**

Hind tibiæ not obliquely spiniform externally at tip; head without tubercles but having a transverse ridge at the base of the clypeus; strial intervals of the elytra equal among themselves, the second

never dilated or punctate basally; body shorter, more oval and more convex as a rule. [Type *Phileurus cribrosus* Lec.]. . **Archophileurus**

Phileurus is widely distributed throughout North and South America but does not occur in the northwestern coastal faunas of North America. *Archophileurus* is much more restricted and is peculiar to the northern Mexican fauna, where it is represented by a number of species.

Phileurus Latr.

The body in this genus is oblong, generally distinctly depressed and with shining black and very dense glabrous integuments. The clypeus is very acute and reflexed at apex and the frontal processes are erect or diverging and situated at the extreme sides. The mentum is peculiarly large and tumid anteriorly, coarsely sculptured and setulose, impressed on its anterior slope and very obtuse at tip, the basal part more depressed; the last joint of the palpi is long, very slender and cylindric and the antennæ, with club as in *Strategus*, have the joints of the funicle extremely short, broad and compactly joined. The mandibles are slender, well developed, not dentate externally, their acute apex generally feebly everted, with a lower angulation near the tip. The post-coxal process of the prosternum is very short, indefinite and glabrous, somewhat as in *Megasoma*, but here the tarsi, though having very much the same filiform shining glabrous character, have the basal joint of the intermediate and posterior strongly, obliquely prolonged externally in a long and extremely acute spiniform process; they are also rather shorter than in the Dynastini. In the *valgus* section, the male is not separable from the female by abdominal characters, as it is throughout the other parts of the Dynastinæ, the last segment being of almost identical form in both sexes; the pygidium then is here the only means of sexual identification and even this does not have the sexual modifications assumed in other parts of the subfamily, although the shorter and basally biimpressed surface in the female may be a modification of the transversely ridged form seen in the Oryctids and Dynastids, and the more evenly convex and more strongly punctured surface in the male is a character evidently homologous with the forms frequently assumed in the males of those tribes. In species of the *truncatus* type, however, the female pygidium, while not differing from that of the male in basal char-

acters or sculpture, is shorter and very much more transverse than in that sex and in this group the last ventral segment of the female is distinctly longer than the penultimate. Organs of stridulation are said to be present on the under surface of the elytra near the sides; the propygidium has merely close-set fine punctures. Our species are moderately numerous, there being several of the South American *valgus* type, though none quite identical with that species; those in my collection may be described as follows:

Head with two long diverging processes in both sexes.....2
Head with two small and less widely separated tubercles in both sexes..3

2—Processes of the head widely diverging. Body very stout, oblong, moderately convex, shining, black, the under surface piceous; head two-fifths as wide as the prothorax, nearly as long as wide, triangular, deeply concave and smooth basally, the processes not as long as the head and shorter in degradational examples, slightly arcuate, concave on their posterior surfaces, never thickened and abruptly reflexed at apex or but very slightly; clypeal apex extremely acute and strongly bent upward; prothorax barely three-fifths (♂), to nearly three-fourths (♀) wider than long, rounded evenly at the sides and widest at the middle, slightly concave and abruptly sloping in apical two-fifths, this surface gradually disappearing anterolaterad; surface behind the declivity with a broad shallow sulcus ending slightly down the anterior slope at a strong tubercle, all the impressed parts with coarse, sparse and shallow arcuate punctures, each enclosing a minute point; remainder finely, sparsely punctured, coarsely toward the sides; base without marginal bead except toward the sides; scutellum moderate, obtusely ogival, having a few shallow punctures basally; elytra about a fifth longer than wide, parallel, as wide as the prothorax and about twice as long, evenly rounded in posterior two-fifths, having very coarse, moderately impressed striæ, enclosing smaller entire annuli, the intervals wide, subequal, moderately convex, the second much broader basally, where there are a number of coarse punctures rather confusedly arranged; pygidium (♂) very smooth, evenly convex, or (♀) much shorter and less convex, smooth, with similar very minute sparse punctulation but more impressed apically along the oblique sides; anterior tibiæ purely tridentate, the teeth long, acute and oblique; hind tibiæ with two external spines; abdomen smooth and broadly impunctate medially, having transverse single discal punctured series bearing short setæ laterally on each segment. Length (♂♀) 26.0–38.0 mm.; width 13.0–18.5 mm. Southern States. [*Scarabæus truncatus* Beauv.].....**truncatus** Beauv.

Processes of the head similarly widely distant at base but thicker, only slightly diverging, their apices abruptly flexed posteriorly, with the posteriorly directed tip acute; form, color and lustre nearly as in the preceding; head relatively not quite so large but otherwise similar, the deep smooth basal concavity prolonged along the posterior surface

of each of the processes, the basal concavity with a few coarse shallow punctures; prothorax as in *truncatus* but shorter, very nearly twice as wide as long, the tubercle prolonged anteriorly by a much higher and more strongly rounded ridge, obsolete only at the apical beading; scutellum with more numerous dense coarse shallow punctures basally; elytra oblong, parallel, longer than in *truncatus*, as wide as the prothorax and two and one-half times as long, evenly rounded in apical two-fifths, the very coarse, shallowly impressed lines enclosing nearly similar entire and strongly umbilicate annuli, the intervals much less regular, those toward the sides very broad and with many very coarse confused punctures, the punctures of the second interval extending, more remotely spaced, to well behind the middle; pygidium (♂) differing greatly, not smooth as in *truncatus*, but with sparse though very coarse deep punctures, irregularly scattered throughout; anterior tibiæ with the three teeth shorter, the external side of the hind tibiæ with but one spiniform tooth, the one above it very short and obtuse; abdomen nearly similar. Length (♂) 38.0 mm.; width 19.5 mm. Mexico (locality unrecorded).

***recurvatus** n. sp.

3—Pronotum without a median tubercle at apex; pygidium (♀) not impressed at base.....4

Pronotum with a median tubercle at apex; intervals of the elytra alternately more elevated; pygidium (♀) biimpressed along the basal margin.....6

4—Pronotum (♂) obsoletely bituberculate just behind the apex, the tubercles separated by the end of the median furrow and wholly wanting in the female. Black, shining; head armed with two cylindrical horns, which become mere tubercles in the female; clypeus at apex acute and strongly reflexed; prothorax with variolate punctures, denser anteriorly and at the middle, the posterior parts nearly smooth; median canaliculation broad; elytra striato-punctate; anterior tibiæ tridentate; transverse ridges of the posterior tibiæ prolonged into spines. Length 21.2–22.5 mm. Lower California (Cape San Lucas).....**vitulus** Lec.

Pronotum (♂) not at all bituberculate apically.....5

5—Form rather slender, elongate, decidedly depressed, not very shining, piceous-black, not much paler beneath; head three-sevenths as wide as the prothorax, coarsely, not densely rugose, smooth at base; tubercles similar in the sexes, small, separated by but slightly more than a third the width, lying at each side of a triangular impression having its acute apex at the acute reflexed clypeal apex and extending behind the tubercles to the smooth base of the head; sides of the clypeus rather concave; prothorax one-half wider than long, parallel, with evenly or subevenly and strongly rounded sides, the apical sinus transverse, the angles advanced and prominent; basal angles obtuse and rounded; basal bead not thick but strong and entire; surface feebly canaliculate along the middle, the furrow very coarsely punctate, gradually completely lost at about apical fourth; punctures very coarse, rather close-set, shallow and variolate, becoming much sparser and smaller postero-laterad and basally;

scutellum small, very obtusely ogival, not wider than long, having some coarse punctures basally; elytra long, a third to two-fifths longer than wide, rounded in apical third, very faintly inflated posteriorly, a little wider than the prothorax and evidently more than twice as long, having coarse, feebly impressed lines enclosing deep, oval and somewhat umbilicate closed annuli, with minute sparse punctules scattered over the regular and subequal intervals, the second interval at base with two to four punctures; pygidium (♂) rather transverse, strongly, subevenly convex, impressed near the oblique lower sides and strongly, closely punctate throughout, or (♀) nearly similar but still shorter and more transverse, the coarse punctures sparser than in the male; anterior tibiæ with a fourth feeble and obtuse tooth above the third; hind tibiæ with a single short oblique spine, the upper one obsolescent. Length (♂ ♀) 19.5–20.5 mm.; width 9.5–9.8 mm. Arizona (Nogales). Southern California (Vallecitas, San Diego Co.),—LeConte. . . . **illatus** Lec.

Form very nearly as in *illatus* but slightly more abbreviated, very shining, deep black throughout; head similar but with the tubercles rather more elevated and acute and the sculpture somewhat less coarse; prothorax shorter, three-fifths wider than long, similar in general form but with the punctures less coarse and differing greatly in character, being deep or almost perforate and not broadly crescentic and umbilicate, as they are in *illatus*, the median impressed line deeper, having coarser and shallower punctures than elsewhere; punctures in basal two-thirds, except toward the sides, very fine and remote; scutellum small, parabolic, smooth, with some coarse punctures at base; elytra as wide as the prothorax, parallel, rounded behind, much shorter than in *illatus*, being about a fourth longer than wide, the sculpture nearly similar; propygidium with fine, very dense punctures, arranged in close-set wavy transverse lines, the hairs small and close, decumbent and rather fine; pygidium nearly as in *illatus* but closely, more coarsely punctured; anterior tibial teeth long and very acute; hind tarsi shorter than in the preceding, two-thirds as long as the tibiæ. Length (♂) 19.0 mm.; width 9.0 mm. Arizona (Phoenix). One example. . . . . **phœnicis** n. sp.

Form very stout, just visibly inflated posteriorly, very shining, piceo-castaneous, barely paler beneath; head relatively smaller, two-fifths as wide as the prothorax, otherwise almost as in *illatus*, except that the feebly concave sides of the clypeus have only a very few remote minute punctures; prothorax very much more transverse and larger in size, fully two-thirds wider than long, the outline somewhat similar, the impression along the median line not at all definite, very broad and shallow, broader and with a large cluster of very coarse punctures before the middle, evanescent apically, where, near the apex in certain angles of reflected light, there appears to be an excessively feeble, narrowly bilobate tumidity, the surface at apex sloping throughout more rapidly to the apical bead; punctures very coarse and disposed nearly as in *illatus*, but very much deeper and scarcely variolate; scutellum nearly similar but with the basal punctures very much deeper; elytra only about a fourth longer than wide,

more broadly rounded at apex, barely at all wider than the prothorax and much more than twice as long, the very coarse even and moderately impressed lines of deep elongate perforato-umbilicate annuli almost similar, except that there are still fewer punctures on the second interval basally, there being in the type none on the left and but two on the right; pygidium of the female throughout nearly as in *illatus*, the tibiæ nearly similar. Length (♀) 22.8 mm.; width 11.5 mm. Southern Arizona (the locality unrecorded).....**puncticollis** n. sp.

6—Pygidium (♂) with coarse deep and conspicuous punctures. Body depressed, narrower than in *valgus*, similar in the deep black shining surface and rather small head, the latter broadly concave and with coarse distant anastomosing incised rugulosity, the lines usually attended by minute punctures; tubercles nearly at the extreme sides; acute apical tubercle almost vertically elevated and with two feeble elevated lines diverging posteriorly from its base, bending outwardly and becoming more obtuse to the posterior tubercles; oblique sides of the clypeus moderately elevated; anterior eye-canthus fully as prominent as the eye, rather narrowly rounded and somewhat reflexed; antennal club rather small, twice as long as thick; prothorax one-half to three-fifths wider than long, parallel and rounded at the sides, the median sulcus deep, coarsely punctate, evanescent and nearly punctureless basally, distinct along the feeble transverse anterior impression to the base of the rather strong tubercle; surface strongly, closely punctate, the punctures coarse, crescentic and subconfluent apically, fine and sparse thence to the base but coarser gradually, though simple, toward the sides; scutellum small, with some coarse punctures basally; elytra a fourth longer than wide, equal in width to the prothorax and distinctly more than twice as long, obtusely and rather abruptly rounded at apex, the striæ coarse, moderately impressed and with rather coarse and well spaced, deep umbilicate annuli; series closer, with the punctures slightly confused, toward the sides; intervals alternately wider and higher and with minute scattered punctules, the second basally with an impressed series of two to five or six coarse punctures; pygidium moderately transverse, rounded apically, convex, not impressed along the base; anterior tibiæ with the fourth or upper tooth small but acute and distinct, the first or apical slender, externally oblique and pointed at apex, the second slender, obliquely truncate internally at tip; external spinule of the hind tibiæ small; abdominal segments each with a series of coarse umbilicate and areolate punctures along the basal margin, also with a series of simple discal punctures laterally. Female a little larger than the male but not differing otherwise, except in having the pygidium shorter, less convex, more transverse, deeply biimpressed along the basal margin and with smaller and much sparser punctures. Length (3 ♂, 5 ♀) 19.4–20.5 mm.; width 9.0–9.8 mm. Texas and Louisiana.....**texensis** n. sp.

Pygidium (♂) with fine sparse punctures, becoming a little less fine basally, though everywhere sparse and differing further from those

of the preceding species in being very shallow and more finely umbilicate.....7

7—Head small or very moderate in size somewhat as in the preceding species, but with the sculpture less in coarse interlacing lines than in crescentiform shallow punctures; anterior eye-canthus smaller, much less prominent than the eye; prothorax (♂) similar throughout but less transverse, not one-half wider than long, the sulcus sharper, deeper and less coarsely punctate, the basal bead similarly fine, feeble and somewhat irregular but entire; scutellum wholly smooth, not at all punctured basally; elytra longer but similarly sculptured, fully a third longer than wide, rounding more gradually in apical two-fifths, fully as wide as the prothorax and barely twice as long; pygidium similarly convex and rounded at apex but rather more attenuated at the ends; legs and abdomen nearly similar, the metasternum likewise with very large separated shallow annuli laterally. Female nearly similar to the male type but rather more slender, the pygidium nearly as in the female of *texensis* but with the basal impressions less abruptly deep inwardly and more widely separated. Length (♂ ♀) 19.0–21.8 mm.; width 8.8–10.4 mm. Louisiana to Florida....**sulcifer** n. sp.

A—Female nearly as in the same sex of *sulcifer*, except that the body is narrower and more elongate and with the head somewhat smaller as a general rule, the concavity of the head with coarser arcuate anastomosing incised lines; anterior eye-canthus more projecting and reflexed though not quite as prominent as the eye; prothorax nearly similar but with the punctures relatively stronger toward the sides in many cases; elytra nearly similar but more elongate and likewise very much less obtuse at tip than in *texensis*, fully as wide as the prothorax and distinctly more than twice as long; pygidium even shorter than in *sulcifer*, finely, remotely punctate, the basal impressions widely separated medially and similarly gradually formed internally, not abruptly deep and closer as they are in *texensis*. Length (♀) 19.7–20.2 mm.; width 8.7–8.9 mm. North Carolina (Southern Pines),—Manee.....**carolinæ** n. subsp.

Head notably large for the *valgus* section, the body (♂) larger and stouter than in either of the preceding, similar in color, lustre, general outline and sculpture; head fully three-sevenths as wide as the prothorax, having well separated arcuate punctures, each enclosing a single fine punctule; concavity between the eyes deep, ending anteriorly at the line between the high tubercles, the clypeus and apical tubercle as usual; eye-canthus obtusely triangular, reflexed, very moderate and much less prominent than the eye; antennal club stouter, not twice as long as thick, oval, as long as the preceding six very short transverse joints; prothorax three-fifths wider than long, of the usual outline and sculpture but with the arcuate anterior punctures each enclosing a fine punctule, which is more distinct than usual; scutellum small, very obtusely ogival, with strongly arcuate sides and with scattered punctures extending beyond the middle; elytra a fourth longer than wide, barely as wide as the prothorax and not quite twice as long, gradually rounding in apical two-fifths, the intervals alternating in width and height and with

excessively minute sparse punctulation, the second with the basal series extending beyond basal fourth in the type; pygidium strongly, evenly convex, transverse, broadly rounded apically, the punctures everywhere very sparse but distinct, umbilicate, not as coarse or deep as in *texensis* and becoming fine and still more remote medio-apically; basal margin very feebly impressed laterally as a vestige of the female character; legs as usual, the upper or fourth tooth of the anterior tibiæ acute and fully half as large as the next. Length (♂) 23.0 mm.; width 10.5 mm. Florida..... **floridanus** n. sp.

It is highly probable that the species described above under the name *recurvatus* is identical with that which was called *truncatus* by Mr. Bates in the Biologia; if so, it proves that the pygidium could not have been examined at all, as the coarse punctures are very conspicuous. The description of *valgus* given by Burmeister shows that he confounded several species under that name, and the forms from the temperate regions of North America are all different from the tropical South American types. The single example from Venezuela before me is closely allied in its general characters to be sure, but is different; the head is notably small as in *texensis* and *carolinæ;* the form is shorter and stouter, nearly as in *floridanus* and the pygidium of the female has the basal impressions shallower, more gradually evanescent internally and much more widely separated. At the same time, it must be confessed that all these forms are closely allied among themselves and to the typical *valgus*, and just what may prove to be their exact value can only be determined in the future. Mr. Haldeman described (Proc. Acad. Phila., I, p. 304) a *Phileurus castaneus* from Alabama. There is no feature mentioned by which it can be distinguished from the typical *valgus* and it is founded upon an immature specimen, which may or may not have been adventitiously imported into Mobile from South America. I would therefore suggest the dropping of this name, for even if it could be proven beyond doubt to refer to any one of the forms here described, it would be most inappropriate to apply such a name to a beetle having so intense a degree of blackness as these species of *Phileurus;* it should therefore remain a synonym of *valgus*, under the general scope of that name. *Vitulus* Lec., is probably a species distinct from *illatus* and I therefore quote the original description above; the author makes no allusion to *illatus* in describing *vitulus*, showing that no extraordinary likeness presented itself to his mind, and in

my male of *illatus* there is no trace of the faint apical thoracic tubercles mentioned under *vitulus*.

The following species was sent to me some years ago under the name *Phileurus affinis*, but it bears no close resemblance to it and is allied to *valgus:*

***Phileurus clathratus** n. sp.—Distinctly narrower and more elongate than *valgus* but similar in color, lustre, depressed upper surface and alternately more prominent elytral intervals; head similar, two-fifths as wide as the prothorax, the latter exactly as in *valgus* in general character, but with the parallel sides much less strongly arcuate and with the depression behind the apical tubercle a little larger and not impressed so evidently by the continuation of the median sulcus; anterior coarse sculpture more transversely ruguliform; scutellum smoother and more sharply ogival; elytra with similar close-set pairs of very coarse sulci, separated by wider and more convex intervals, but with the coarse punctures of these sulci very different; they are not rounded and well separated as in *valgus*, but so close-set as to be separated by slender transverse bars, giving them a quadrate appearance; pygidium of the male convex, shining and with coarse deep sparse punctures throughout. Length (♂) 21.0 mm.; width 9.4 mm. Brazil.

The elytra in the type are fully two-fifths longer than wide and fully as wide as the prothorax, the latter being much less transverse than in *valgus* and barely more than a third wider than long. Although a member of the *valgus* group this is a valid species and in no way properly of a subordinate nature.

Archophileurus Kolbe.

This genus is well founded upon the *Phileurus cribrosus* of LeConte, a species bearing but little resemblance to any of those described above; the body is of short, suboval and more convex form, and all the species are of very small size for the present tribe. The head differs radically in having no trace of the posterior tubercles or horns of *Phileurus*, but has a transverse discal ridge, of which there is never the faintest trace in that genus. Besides this, there are no anterior thoracic modifications, and the second elytral interval is similar to all the others. In the male, the pygidium is much more swollen and tumidulous medially, it being evenly and feebly convex in the female, though, because of being hidden in great part under the elytra in that sex, I am unable to describe any possible basal modification. So far as known among my limited material, the female is rather smaller than the male as

in *Megasoma* and many other genera. The four species before me may be known as follows:

Prothorax widest behind the middle. Body oval, convex, shining, deep black throughout, the bristles at the sides of the prothorax beneath, on the legs and post-coxal prosternal process, obscure fulvous; head small, very short, barely two-fifths as wide as the prothorax, coarsely, subconfluently punctate, the ridge obtuse on its summit, scarcely at all depressed medially and but little over a third as long as the entire width; clypeus very short, feebly impressed along the middle, the acute apical tubercle strongly elevated, the sides below the true lateral edges much expanded; prothorax two-fifths wider than long, the sides evenly and moderately arcuate, converging anteriorly from well behind the middle; apex two-thirds as wide as the base, the sinus transverse, the angles acute, anteriorly prominent; side margins fine, the entire basal bead defined by a coarse deep even groove; surface very feebly impressed along the median line behind the middle, the punctures coarse, dense, deep and close-set but not confluent antero-laterad, elsewhere rather coarse but well separated, sparser and still smaller medio-basally; scutellum very small, having a few punctures; elytra barely longer than wide, evenly rounded in posterior half, rather wider than the prothorax and two-thirds longer, the striæ regular and coarsely punctate, not deeply impressed, the intervals with extremely minute sparse punctulation; pygidium of the female with the exposed apical part rather coarsely but sparsely punctate and nearly flat; abdomen sparsely, rather coarsely punctured toward the sides; anterior tibiæ purely tridentate as usual in the genus, the hind tibiæ expanded, even throughout, with short stout obtuse spinules at apex and with two oblique feeble ridges at the middle, neither at all spiniform externally. Length (♀) 15.5 mm.; width 8.0 mm. Mexico (Saltillo, Coahuila),—Wickham.

***brevis** n. sp.

Prothorax widest at the middle, the sides parallel, evenly and rather strongly arcuate. 2

2—Body oblong, the elytra distinctly longer than wide. Upper surface not quite so convex, dull black, though possibly from wear in the unique type, black beneath; head larger than in *brevis*, three-sevenths as wide as the prothorax, coarsely punctured, very sparsely medio-basally, the very short clypeus rather finely and closely punctato-rugulose, the ridge rather fine and feebly bilobed along the summit, nearly two-thirds the total width, gradually evanescent at the ends; clypeal apex as in *brevis;* eye-canthus large, rounded, much more prominent than the eye; prothorax large, convex, not quite one-half wider than long, transversely oval, the very feebly impressed median line basally, punctures and beading nearly as in *brevis*, but with the punctures finer, more remote and more obsolete basally throughout the width; scutellum very small, with rather close-set punctures except posteriorly; elytra a fifth longer than wide, barely as wide as the prothorax, rounded in apical two-fifths, the striæ coarse but only very feebly impressed, the punctures rather coarse, well impressed and

widely separated in the series, deeply annulate, coarse and confused at apex as usual but not along the sides; pygidium (♀) more exposed in the type, feebly convex and strongly though sparsely punctured throughout, the basal margin hidden by the elytra; legs as in *brevis*. Length (♀) 17.0 mm.; width 8.4 mm. Mexico (the locality not recorded) ..... ***longulus** n. sp.

Body more oval, very strongly convex, polished black, the elytra not or barely longer than wide 3

3—Form (♂) moderately stout; head moderately small, fully two-fifths as wide as the prothorax, coarsely, subevenly, not very densely punctate, the clypeus more finely, discretely and deeply punctate; ridge moderately high and thin, feebly depressed at the middle and gradually evanescent laterally rather close to the sides; clypeus not so short as in *brevis*, the oblique sides straighter to the apical tubercle and the sides below the elevated margin are far less expanded, so that they are but slightly visible from above; eye-canthus very broadly rounded and scarcely so prominent as the eye; prothorax rather short, fully one-half wider than long, transversely oval, of the same general outline as in *longulus* but with the punctures everywhere very coarse, not quite so coarse and sparser basally, very coarse and deep antero-laterad, the median line behind the middle feebly impressed and with a few very coarse punctures; scutellum not only very small but narrow, longer than wide, differing in that way from either of the preceding; elytra barely visibly longer than wide, rounded in apical two-fifths, the striæ very coarse but shallow, fully as wide as the narrower intervals; the latter alternate slightly in width; punctures very coarse, deep, perforately elliptic-annular at the bottom; pygidium strongly, umbonately convex just below the middle, very coarsely, confluently punctate basally and with very coarse but separated punctures thence over the entire surface to the apex; abdominal segments each convex and with a widely spaced series of coarse punctures; legs nearly as in the preceding species, the spinules of the hind tibiæ close-set and a little longer. Female smaller than the male but otherwise nearly similar, the punctures of the head and prothorax almost similar in coarseness and distribution, but everywhere rather less close-set; elytra a little shorter, barely longer than wide and rounded in posterior half, the sculpture as in the male; pygidium with only the tip exposed in the single example at hand, this nearly flat and very coarsely punctate; sutural angles of the elytra minutely subdenticulate in both sexes but especially in the female. Length (♂♀) 13.5–14.7 mm.; width 6.7–7.2 mm. Texas (Valley of the lower Rio Grande). [*Phileurus cribrosus* Lec.] ..... **cribrosus** Lec.

Form (♂) larger and notably stouter than in *cribrosus*, suboval, strongly convex, highly polished, deep black throughout; head two-fifths as wide as the prothorax, sparsely and very moderately punctate, coarsely rugose at the sides, the clypeus shorter and more concave than in *cribrosus*, very much more shining, the sculpture consisting of very feeble sparse rugulosity and with very widely scattered

small shallow indistinct punctures, the erect apical tubercle higher and almost spinuliform, the sides below the margins more expanded and visible from above, though not so largely as in *brevis;* sides before the very small sunken eyes broadly rounded; ridge fine and sharp along the summit, very feebly sinuate at the middle, extending scarcely beyond lateral fifth or sixth; prothorax larger, more than one-half wider than long, the outline and beading nearly similar, but the punctures anteriorly are less coarse and are widely separated even near the angles, very sparse but rather strong throughout basally, the median line impressed feebly behind the middle and with only moderately coarse punctures; scutellum similar, longer than wide, very small in size and with coarse punctures basally; elytra much more inflated, barely at all longer than wide, evidently a little wider than the prothorax and three-fourths longer, more obtusely rounded in about apical third, the parallel sides more arcuate, the very coarse striæ and punctures nearly similar, the lines not quite so close-set, due to the greater elytral width, and not quite as wide as the intervals, which are equal among themselves; pygidium with a similar very strong umbonate swelling, the surface more finely punctato-scabrous, not through basal half as in *cribrosus*, but only near the base, with scattered coarse punctures elsewhere, except on the posterior slope of the umbo, which is very smooth and polished and almost devoid of punctures; abdomen nearly as in the preceding. Female unknown. Length (♂) 16.3 mm.; width 8.3 mm. Texas.

bullatus n. sp.

There are probably many species of this genus, which is a local development in northern Mexico and the adjoining parts of Texas; it seems to belong rather to the fauna of the low hot coast regions than to the elevated and drier interior plateaux, the latter forming part of the true Sonoran faunal region.

Subfamily CETONIINÆ.

In this very important division of the Scarabæidæ, the American continents contribute a far smaller proportion of the known genera and species than they do in the preceding two subfamilies, and it is in Africa that the Cetoniinæ occur in greatest profusion and variety, including there some of the largest of the Coleoptera. The body generally has a more or less rhomboidal outline, with highly colored or markedly variegated hard integuments and small or very moderate head. The mandibles are very feebly developed as a rule, being a thin corneous plate externally, becoming coriaceous and ciliate within, somewhat as in *Aphonus* of the Dynastinæ, and fitted merely for such light foods as pollen or the sap of trees.

The huge *Goliathus*, feeding upon such material, reminds us of certain whales subsisting solely upon minute marine animals entangled in filaments of whalebone, as they speed through planktonian waters. In *Cremastocheilus*, however, the mandibles become larger and more visible. The mentum is very broad and obtuse anteriorly, the ligular part not at all differentiated, and, in *Cremastocheilus*, it assumes a very large oval concave form, quite different from the anteriorly tumid plate seen in *Argyripa;* in *Cotinis*, the large but flat plate is broadly and angularly emarginate at apex. The labial palpi are inserted in fossæ at the sides of the broad anterior part of the mentum, the fovea disappearing in *Cremastocheilus*. The antennæ are 10-jointed, with a 3-jointed club as in the two preceding subfamilies.

The prothorax is as a rule much narrowed arcuately from about the base to the apex, but the base affects several different forms; in the Gymnetids, for example, the greatly produced median lobe covers all of the scutellum, or at most leaves but the apex of the latter exposed. The mes-epimera are generally large and convex, and, from a dorsal point of view, intervene conspicuously between the humeri and thoracic base, but in the Trichiids they become thin and not or scarcely visible from above, as in some of the Anomalids. The prosternal post-coxal process is generally obsolete, the tarsi slender, with equal simple claws and organs of stridulation are almost invariably wanting. Most of the species in flying do not elevate the elytra, but slip the wings out from under them. The last abdominal spiracle is more posterior in position in the Cremastocheilids. The sexes are scarcely to be distinguished as a rule, though there are certain special cases where sexual identity becomes very apparent, as in the lustre of the under surface in the *chevrolati* section of *Gymnetis*. The tip of the abdomen seldom affords a distinct clue to the sex of the individual, though the apex of the last segment is apt to be slightly more truncate at the middle in the male, and there is sometimes a feeble concavity along the median line of the abdomen in that sex, as well as an evidently longer antennal club; in *Allorhina* the anterior margin of the clypeus is armed only in the male, which distinguishes this genus from *Cotinis*, where the armature is common to the sexes.

It is in this subfamily especially, that numerous cross affinities

produce continual exceptions in any system of tribal division that can be proposed, based at least upon external characters of the imago alone, so that no very satisfactory method of tribal subdivision has been discovered; but, when limited to a restricted fauna such as that of North America, the matter is simplified. I think, for instance, that the species of the North American faunas can be assigned to the four following tribal groups, without any intermediates, so far as known, and therefore in a very definitive manner:

Mes-epimera distinct from a dorsal point of view.....2
Mes-epimera not visible dorsally.....5
2—Mandibles small, in large part membranous; last abdominal spiracle flat and situated at or before the middle of the segment; mentum, tarsi and antennæ normal; habits hypergeal.....3
Mandibles in great part corneous, though very small; last abdominal spiracle tumidulous and behind the middle of the segment.....4
3—Scutellum covered by the basal lobe of the pronotum..GYMNETINI
Scutellum free, the pronotal lobe feeble and usually sinuate at the scutellum.....CETONIINI
4—Mentum, tarsi and basal joint of the antennæ abnormal; scutellum exposed; sexes almost completely similar; habits often inquilinous.
CREMASTOCHEILINI
5—Scutellum exposed; elytra not sinuate laterally; prothorax more hexagonal; habits floricolous.....TRICHIINI

These groups are not considered of equal value by Lacordaire, but I can see no reason for suggesting only two principal groups based upon the extent of the mes-epimeron, as the form of this part is intermediate in the Cremastocheilini, which type is fully as isolated in every way as the Trichiini, if not more.*

Tribe GYMNETINI.

The species of this tribe are recognizable easily by the elongate basal lobe of the pronotum, which hides all or nearly all of the

* I greatly regret having to use the spelling *Cremastocheilus*, for *Cremastochilus* is rather better and less inconvenient, but if the laws of nomenclature are to be of any permanent value they must be consistent. One of these laws, now generally recognized, is that the spelling of generic words cannot be changed, except they be misprinted in such a way as to render them unpronounceable, and then an entirely new name must be proposed, with new authorship. This objection cannot be urged in such cases as *Cremastocheilus*, *Amblycheila* or *Leiopus*, and the spelling of these and similar words, after publication in a legitimate way, should therefore not be altered. Specific words can be altered, however, because these are supposed to have a definite meaning in a definite language. Generic words have more the nature of arbitrary symbols.

scutellum. The dorsal surface is more or less feebly convex, and the elytra have the usual post-humeral sinus well developed. The intercoxal process of the mesosternum is broad and variously modified and the general surface glabrous above and beneath, or nearly so, though the pygidium generally has minute stiff erect hairs. There are but two genera found north of the Mexican boundary, though several others, having variously modified cephalic surface and clypeal apex, occur in Central America; our two genera are the following:

Clypeus simple, sinuato-truncate at apex in both sexes; mesosternal process variable in form but usually reflexed and prominent; pygidium usually opaque and with peculiar abruptly incised, close vermiculate sculpture as a rule. [Type *Scarabæus lanius* Linn.] **Gymnetis**

Clypeus with a corniform process at the apical margin in both sexes; mesosternal process flatter and generally more horizontal; pygidium usually more shining and with finer transverse wavy incised lines. [Type *Gymnetis mutabilis* G. & P..]..... **Cotinis**

These two genera are very distinct in general habitus, *Gymnetis* generally being of smaller size and with mottled or intricately variegated ornamentation, except rarely in such forms as *cinerea*, where the color is uniform; in *Cotinis* the color scheme is entirely different, the upper surface usually being green, tawny to black, with or without pallid side margins; in both genera the upper surface is opaque as a rule, though some species of *Cotinis* and one or two now placed in *Gymnetis* are polished above as well as below. In two Brazilian species of *Gymnetis* before me, labeled *minor* and *carbonaria*, but perhaps not correctly, the entire upper surface is distinctly though sparsely pubescent.

Gymnetis MacLeay.

It is at times almost impossible to differentiate the sexes in this genus, though in some species there are special marks of a sexual nature, as for example in the *chevrolati* group, as stated above, where the male is densely dull throughout the under surface but largely polished in the female. I also find that in this section and some others, the hind tarsi are notably longer in the male, but otherwise there are no evident sexual signs whatever. There are two subgeneric groups among our few species as follows:

Upper surface opaque; head without more than a feeble longitudinal elevation; anterior tibiæ tridentate externally.....Group I
Upper surface shining, the head with a distinct longitudinal elevation; anterior tibiæ with a single feeble external tooth at about apical third.....Group II

The second of these groups is represented by a single species, so far as known, while of the first probably at least two hundred exist in collections. I find among my tropical representatives some inconstancy in the dentition of the anterior tibiæ; these are generally clearly tridentate, but in four species marked *insculpta*, *apiata*, *albiventris* and *multipunctata*, from Colombia and Brazil, they have no external tooth except the slender acute apical process and their outline is remarkably surate, a form which however does not differ essentially from the minutely tridentate tibiæ of *liturata;* in another, labeled *braziliensis*, they are still more aberrant, having an external tooth just beyond the middle but no other, except the apical, which is very stout, with rather deeply, strongly and acutely bifid apex—possibly a sexual character. It would seem from various points of view, that the Gymnetids stand in urgent need of general revision, for there must be many other aberrant forms besides these and the divisions made by Burmeister.

Group I.

Subgenus **Gymnetis** in sp.

In the following tabular statement I have included the Mexican and Central American *chevrolati* and *cinerea* sections of the subgenus, as I have what appear to be a number of distinct taxonomic forms belonging to them, that have not been characterized heretofore. The *chevrolati* section is evidently a part of that containing our common *sallei*, and in the extended intervening geographic region analogous forms occur quite frequently. It is necessary to include the *cinerea* section, for *argenteola* Bates, forming a part of it, comes within our territories:

Upper surface opaque, black or blackish, margined externally with straw-yellow, either throughout or on the elytra alone, the yellow margin usually prolonged internally at one or more points.....2
Upper surface similarly velvety-opaque but almost perfectly uniform in tint throughout, and of various shades of ochraceous, olivaceous or greenish-gray; body smaller, narrower and still more depressed as a rule; mesosternal process nearly flat, obtusely rounded at tip and almost horizontal.....4

2—Mesosternal process but slightly reflexed, obtusely conoidal. Body stout, feebly convex and opaque black above, with the sides throughout broadly and irregularly straw-yellow, this border broadly and triangularly prolonged inward just behind the middle of the elytra, enclosing one to three black spots and with the irregular internal apex of the triangle very near the suture; anterior to this there are one to three short slender prolongations from the pale margin; on the pronotum the black area extends narrowly along the middle almost to the apex, the sides of this narrow area prolonged posteriorly in slender pale lines and flanked on either side anteriorly by a small black spot; in the broad pale margin, at about basal third, there is an obtuse angular inward extension; in the male, the pale areas are reduced in width throughout and, on the pronotum, the black area almost attains the apex very broadly; the head is always pale, except at the apex of the clypeus, and there is usually a small black basal spot; elytra slightly narrower and more cuneate in the male, in which sex the sharply and deeply, vermicularly rugose pygidium has a few small irregular yellow spots near the apex, the under surface broadly yellow or opaque toward the sides and the hind tarsi but little shorter than the tibiæ. In the female the vermiculate rugæ of the pygidium are not so coarse and are less dense, with yellow spots less apparent, the under surface of the body polished throughout, the sides of the metasterna somewhat yellow and the hind tarsi very much shorter, about two-thirds as long as the tibiæ; in both sexes the pygidium has close-set, short but rather slender erect grayish hairs, less abbreviated however than in *chevrolati*. Length (1 ♂, 4 ♀) 20.5–21.5 mm.; width 11.4–12.2 mm. Texas.

sallei Schaum

Mesosternal process almost vertically reflexed, more obliquely conoidal and frequently with a small tubercle on its anterior convex face, which basally, as in the preceding species, is densely clothed with very stiff black hairs. 3

3—Form stout, larger and rather more elongate than *sallei*, opaque velvety-black or brownish-black above, the head, pronotum and mes-epimera without pale maculation, the elytra with a narrower straw-yellow margin, equal from base to apex, but with about two short slender inward extensions, an at first posteriorly oblique fasciate offset, beginning at the middle and more or less extended internally, and, just behind this, an anteriorly oblique offset which, as a rule, joins the median offset at outer two-fifths, the markings slightly broader throughout in the female but otherwise similar in the sexes; the opaque pronotum is sometimes very feebly and indefinitely mottled linearly with a more grayish black. Male with the vermiculate grooves of the pygidium sharply incised, becoming shorter, more detached and more widely separated by opaque yellowish indument apically, the entire under surface, excepting the middle of the metasternum, opaque blackish-olivaceous; hind tarsi more than three-fourths as long as the tibiæ. Female having the pygidium more evenly and densely vermiculate with sharply incised grooves throughout, without intervening opaque indument at any part,

the under surface polished, becoming olivaceo-opaque only toward the sides of the metasternum, the hind tarsi much shorter, three-fifths as long as the tibiæ. The pygidium in both sexes has very short stiff erect blackish and inconspicuous hairs throughout, and the anterior tibiæ have three small external teeth, even more feebly developed than in *sallei*. Length (1 ♂, 1 ♀) 21.7–22.3 mm.; width 12.4–13.8 mm. Honduras (San Pedro Sula). Nicaragua—Bates. [*Chevrolat* G. & P.; *ramulosa* Bates].....***chevrolati** G. & P.

Form and size somewhat as in the preceding, deep opaque-black, the anterior parts without marking or mottling of any sort, the elytra with a very even external straw-yellow margin, from base to apex, having just behind the middle, a slender biramose deltoid inward extension, which, at outer third or fourth, becomes a single straight transverse line, extending almost to the suture; in the female the marking is much broader, the deltoid outer bifurcation of the transverse line solid and the transverse straight bar thick and even; anterior to this there is no indication of inward extensions of the lateral stripe at any point; head small as usual, opaque except at the abruptly and moderately reflexed, truncate clypeal apex and evenly, moderately punctured throughout; prothorax of the usual form, the sides toward apex only very feebly and briefly sinuate, feebly punctured postero-laterad, the fine submarginal stria not attaining the base; elytra without so many fine punctures toward the humeri as in *chevrolati;* pygidium with the deep and abruptly formed, vermiculate lines finer than in that species and with the minute erect hairs paler and more visible, shorter and stiffer than in *sallei*, more disintegrated and with intervening opacity in the male; sexual characters of the under surface and tarsi nearly as in *chevrolati;* anterior tibiæ with the small teeth less unequally spaced. Length (2 ♂, 1 ♀) 21.7–23.0 mm.; width 13.0–13.8 mm. Costa Rica.....***balteata** n. sp.

4—Under surface (♂) throughout brilliant silvery cobalt in color, the legs, excepting the tarsi, similar in coloration. Body rather narrowly oblong, somewhat greenish-flavate and opaque above; head anteriorly, thoracic margin incrassately, mes-epimera and scutellum brilliant silvery cobalt; head sparsely punctate, the punctures in considerable part arcuate, flat, the clypeus quadrate, the margin, especially at apex, acutely reflexed, the apex sinuate medially; prothorax and elytra sparsely and irregularly, arcuately punctulate, with smaller rounded punctures intermingled, the former discally and at base almost impunctate; suture somewhat elevated, slightly produced at apex; pygidium (♂) yellow-opaque, moderately large, unequally convex, vermiculato-strigose, briefly setulose; body beneath and the legs sparsely and more coarsely arcuato-punctate; mesosternal process short, conical, not at all reflexed; anterior tibiæ finely and acutely tridentate. Length (♂) 17 mm. Mexico (Pinos Altos in Chihuahua) and Arizona (Cochise Co.,—Schaeffer).

argenteola Bates

A—Allied closely to *argenteola* but smaller, the body (♂) only just visibly narrowed from the elytral base, very feebly convex, opaque and olivaceous above, the elytra slightly clouded with more

yellowish olivaceous, the under surface and legs, excepting the tarsi, brilliant bluish-green, with cupreous reflection which becomes gradually stronger laterally; head small, nearly flat, opaque, olivaceous, slightly green and more shining toward the sides of the clypeus, which are barely at all elevated, the apex sharply and strongly reflexed, broadly rounded, becoming feebly sinuate medially; surface throughout with small sparse equal rounded punctures; prothorax and mes-epimera uniformly opaque olivaceous throughout, having throughout very sparse punctures, minute medially, stronger but never at all widely arcuate toward the sides, strong but simple on the mes-epimera; elytra about a third longer than wide, the suture strongly elevated except basally, not produced at apex, the angles sharply right; disk of each with the usual two feeble costules and with very fine sparse punctures, obsolete inwardly, and with a few intermingled toward the humeri which are crescentic but not at all strikingly so; pygidium opaque olivaceous-green, with a large cupreous transverse subapical area, having throughout well spaced and fine, vermiculate, sharply incised lines, blackish in color and bearing extremely minute erect inconspicuous setæ, only discoverable under very oblique angle of view; sterna, except medially, hind coxæ and femora with sparse and very coarse arcuate punctures, those of the abdomen similarly sparse but not so large; anterior tibiæ tridentate, the teeth very short and broadly obtuse; hind tarsi slender, almost as long as the tibiæ. Length (♂) 15.0 mm.; width 8.3 mm. Arizona (Nogales),—Oslar. . . . . **lætula** n. subsp.

Under surface glossy black almost throughout in both sexes. 5

5—Basal lobe of the prothorax broader, at base half as wide as the maximum thoracic width. Body depressed, elongate, subcuneiform, pale ochreous-brown and opaque evenly throughout above, the shining black under surface with the meta-parapleura alone partially ochraceo-opaque; head feebly convex along the median line, opaque, ochreous, with fine scattered punctures, becoming shining black and strongly, closely punctate at the sides and apex, the latter very thick but not reflexed and deeply sinuate medially; black sides not elevated, sloping downward externally; prothorax as usual in the *cinerea* section, having a narrow polished black side margin, very different from the conformation of the sides in the *chevrolati* section, uniformly ochreous, having some very small sparse punctures, which, toward the sides, become but little larger though crescentic and with a row of crescentic punctures attached to the elevated lateral bead before the middle; apical margin unmodified; elytra two-fifths longer than wide, uniform in color, the suture strongly elevated posteriorly, the two discal lines very feeble, having some very fine punctures confined to the central part of the disk and thence posteriorly in the concavity adjoining the elevated suture, which is very evidently though obtusely produced at apex; sides almost straight, converging from base to the abruptly very obtuse apex; pygidium in both sexes feebly convex, smooth and densely ochraceo-opaque in about apical three-fourths, this ochreous area with a few short transverse incised

lines, wanting apically; in about basal fourth the surface becomes blackish, with very dense, transversely interlacing incised lines; under surface polished black, with faint violaceous lustre, with some small areas of ochraceo-opacity along the sides of the body; sternal sculpture consisting of fine wavy, widely separated and incised lines, bearing fine sparse hairs; anterior tibiæ tridentate, the upper tooth smaller and feebler in the male. Length (♂♀) 19.0–19.5 mm.; width 10.5–10.8 mm. Mexico (Durango City),—Wickham.

***cuneata** n. sp.

Basal lobe of the prothorax narrower, its base much less than half the maximum thoracic width.....6

6—Londitudinal discal lines of the elytra obsolete. Body nearly as in the preceding but narrower and not quite so depressed, the uniform densely opaque upper surface pale yellowish-ochreous; head rather sharply elevated along the middle, the dense ochreous indument uneven in distribution in the type; punctures rather coarse and deep but not dense, the apex as in the preceding but less sinuate; prothorax similar but with numerous coarse crescentic punctures throughout, though especially conspicuous toward the sides; apical margin with a feeble callous elevation at the middle; mes-epimera with only a few small simple punctures near the edges; elytra almost one-half longer than wide, rather cuneiform but with the sides not so straight as in *cuneata* and with the apical angle much more broadly rounded, the suture posteriorly but feebly elevated, the apical angles not so lobiform; surface completely punctureless, excepting a few simple punctures disposed sparsely and in irregular series along the median line of each, wanting apically and basally; pygidium with indument disposed as in the preceding but more convex and with a greater number of scattered, transversely wavy incised lines, the apical angle much more narrowly rounded; under surface nearly similar, the teeth of the anterior tibiæ all much shorter, broader and more obtuse than in *cuneata*. Length (♂) 18.5 mm.; width 10.3 mm. Mexico (probably from near Jalapa).....***lobiculata** n. sp.

Longitudinal discal lines feeble as usual though evident posteriorly by oblique illumination.....7

7—Body oblong-suboval in form, the elytra but little narrowed from base to apex. Upper surface densely opaque, uniform and more ashy cinereous than in the two preceding or two following species; head with dense indument except at the edges, rather finely, not densely punctate, the punctures bearing short hairs; apex thickened and feebly sinuate; prothorax as usual but wholly without punctures, excepting a very few fine and simple along the sides; apical margin with a small tumidity at the middle; elytra shorter, barely a third longer than wide, the apical angles broadly rounded, the suture barely at all elevated posteriorly, with the angles obtusely lobiform; punctures fine and simple, rather numerous in posterior and inner half but wanting elsewhere; they are arranged in about four rather regular series, with scattered punctures intermediately; pygidium moderately convex, shining and blackish throughout, very evenly and densely incised in close-set transverse and non-vermiculate

interlacing lines; under surface polished, black, the meta-parapleura with more or less pale indument; anterior tibial teeth rather strong and acute. Length (♀) 17.5 mm.; width 10.0 mm. Mexico (locality unknown)..... ***cinerea** G. & P.

Body smaller, narrower, the hind body more elongate, rather more depressed and more cuneate, with the dense opaque indument even and of a dark reddish-ochreous color.....8

8—Head just visibly convex along the middle, covered densely and evenly with opaque indument and with fine separated punctures, except along the middle, the sides and apex of the clypeus exposed, black and with the punctures close, the apex thick, sinuate medially, the angles broadly rounded as usual; hairs borne by the discal punctures very minute, glistening; prothorax as usual, the lateral bead rather fine, elevated, indumentate posteriorly, the apical margin with a small bare though scarcely elevated callosity at the middle; punctures wanting, except a few fine and sparse near the sides; elytra fully two-fifths longer than wide, the apical angles broadly rounded, nearly flat above, the suture barely elevated posteriorly, surface with very fine simple punctures but only in about posterior and inner half, forming series along the elevated lines, with a few intermediate; pygidium as in the preceding but with the transverse interlacing incised lines coarser, deeper and not so close-set, also with the short hairs coarser and more distinct. Male with the upper tooth of the anterior tibiæ obsolete, the pygidium without indument; female with the three teeth of the anterior tibiæ sharp, gradually diminishing upwardly, the pygidium with the scattered hairs very much coarser than in either the male or the preceding species; under surface as in the latter. Length (♂♀) 15.5–16.0 mm.; width 8.8–9.0 mm. Mexico (Guerrero),—Baron. ***simulans** n. sp.

Head rather distinctly but obtusely elevated along the middle, very coarsely and densely punctured, the punctures bearing longer glistening hairs than in the preceding, the ochraceous indument only present at base and along the sides, to slightly beyond the eyes, and in a small median subapical area, the sides and apex of the clypeus with the close punctures very much finer than those of the disk; apex thick, the median sinus rather deep; prothorax formed as usual, the lateral beading rather fine; surface with excessively minute remote punctulation, except laterally and especially antero-laterad, where the punctures become less sparse, notably large and crescentic; apex with a transverse and feebly tumid black callus at the middle; elytra shorter than in the preceding, not much more than a third longer than wide, otherwise nearly similar, though less flattened on the disk and with the apical angles still more broadly rounded; surface completely devoid of any kind of punctuation, except a few extremely minute punctules on the subapical umbo; sutural angles similarly lobiform; pygidium black, feebly convex, devoid of indument, shining, with transverse interlacing and well separated lines, which are much finer, more superficial and scratch-like than in any other species, the sparse hairs rather pallid and coarse; anterior tibiæ

with the three teeth sharp and well developed. Length (♀) 14.8 mm.; width 8.85 mm. Mexico (Cuernavaca, Morelos),—Wickham. *æqualis n. sp.

In the *chevrolati* section sexual characters are pronounced and manifest in several directions as stated, but in the *cinerea* section, which differs greatly in the flatter mesosternal process and finer lateral thoracic beading, as well as in the general style of coloration, sexual characters become almost obsolete and reside, so far as I can see, simply in the anterior tibiæ, the upper tooth being smaller and feebler in the male and sometimes altogether obsolete in that sex; the under surface and legs are polished black throughout in both sexes; the minute callus at the middle of the apical thoracic margin, generally evident in the *cinerea* section but noticeable nowhere else, is also distinct in *Cotinis* and in *Argyripa* becomes larger, anteriorly prominent and conspicuous; perhaps it is the vestige of a longer thoracic process in some extinct precursors. Mr. Bates gives several southern Mexican and Central American localities for *sallei*, but in my opinion he has confounded a number of related species. The above description of *argenteola* Bates is derived directly from the original, as it is said by Mr. Schaeffer to have been taken in Cochise Co., Arizona. The under surface in *lætula* could hardly be termed cobaltic, which in the usual sense means a rather pure blue; in *lætula* this color is pale bluish-green and the metallic lustre is not silvery so much as coppery; the dorsal punctures are far less developed and the size materially smaller. In the figure of *argenteola* on plate 22 of the Biologia, the tarsi have a pallid tint, perhaps a mere inaccuracy on the part of the artist, but if true the tarsi are very different from those of *lætula*, where they are black. *Margaritis* Bates, of which I have two fine examples from Guerrero, taken by Baron, is allied rather closely to *argenteola*, showing that there are probably numerous other allies of that species besides *margaritis* and *lætula*.

Group II.

Subgenus **Gymnetina** nov.

The polished upper surface and the cephalic ridge, as well as certain peculiarities of the vestiture, would seem to indicate a rather distinct subgeneric group of *Gymnetis*, for which the above

name is proposed. The original description of the type by LeConte is as follows:

> Black, shining; prothorax sparsely and finely punctured, margined at the sides with white pubescence; elytra vaguely and not at all densely punctate, briefly but acutely prolonged at apex, each with two white spots transversely placed a little behind the middle; metasternum laterally and its episterna clothed with cretaceous pubescence; mesosternal epimera with a cretaceous spot; pygidium rugosely punctate, nigro-pubescent and with two large cretaceous spots. The epistoma is strongly margined, truncate in front, parallel at the sides, the head sparsely but coarsely punctured, with elevated sides and, between the eyes, there is a medial elevation which extends forward to the line of antennal insertion. The median lobe of the prothorax is rounded and the scutellum is slightly exposed though very narrow. The ventral segments have each a lateral white spot near the elytral margin and the anterior tibiæ are armed with a feeble tooth at one-third from the apical angle. Length 22.5 mm. Arizona.
>
> **cretacea** Lec.

This species may not be so rare as local, both in time of appearance and in geographic habitat. Mr. Schaeffer informs me that he saw it in considerable number at one place in southern Arizona, but could only secure a few specimens because of its remarkable activity. The species of *Pseudomorpha* are rare in collections for similar reasons.

Cotinis Burm.

While the general contour of the body in *Cotinis* is somewhat as in *Gymnetis* and the general habitus in certain forms, called *Latemnis* by Thomson, even closer, the structure of the head and clypeus and general scheme of ornamentation are altogether different. The middle of the clypeal margin is here prolonged upward in an extremely variable small corniform process in both sexes and there is a prominent longitudinal cephalic ridge, generally with free anterior end. *Allorhina* is similar in almost every way to *Cotinis*, except that this clypeal process occurs in the male alone. The hind coxal plate is acutely angulate and posteriorly prominent in *Cotinis*, but in certain species this angle becomes obtuse, constituting *Balsameda* Thomson, which is probably a distinct genus, though united with *Cotinis* by Bates. The suture between the head and clypeus frequently becomes distinct toward the sides, especially in *lebasi* and some others, but it is never obvious in *Gymnetis;* the surface of the head and clypeus at each side of the medial prominence

is very deeply concave, more sparsely punctate and usually with more marked pubescence; the anterior coxæ, inner side of the anterior femora basally and the hind margin of the prosternum are densely pubescent, but elsewhere the hairs beneath are few in number and very short, except the dense internal fringe of the hind tibiæ, and the upper surface is glabrous, opaque, green to black, with more or less pale margins as a rule in our species, but becoming polished throughout in certain tropical forms, such as *viridicyanea*. Sexual modifications are extremely few and feeble and reside in the dentition of the anterior tibiæ, sometimes also in the longitudinal abdominal impression of the male and relative lengths of the hind tarsi. The Mexican species allied to *mutabilis*, as stated by Bates, constitute an enormously difficult taxonomic problem; I have therefore limited the tabular statement of species given below simply to those forms at hand, occurring in the more subarctic parts of the continent; they all have the hind coxæ acute postero-laterad and I have given most of them a specific status provisionally; they are moderately numerous and as follows:

Longitudinal cephalic ridge terminating anteriorly in a free apex. (COTINIS in sp.) 2

Longitudinal cephalic ridge less elevated and without free anterior extremity, the corniform process of the clypeal apex lobiform or nearly obsolete (LATEMNIS Thoms.) 10

2—Lateral marginal bead of the pronotum becoming more or less notably broad basally; front of the clypeus with a narrow longitudinal ridge which extends partially up the posterior side of the apical process, thereby giving that process additional strength in strut-like fashion; pygidium uniform in coloration 3

Lateral marginal bead fine throughout; front of the clypeus never notably ridged, the apical process never conspicuously long; pygidium always bicolored 5

3—Body oblong-oval, not or but very feebly narrowed posteriorly, notably depressed on the upper surface and dull, the head shining, somewhat metallic green, the pronotum deep obscure green, with a tawny lateral stripe, which is variable in extent, the lateral margin, including the bead, bright metallic green, the elytra invariably pale red-brown, the sutural region, broadening slightly basally, very suffusedly obscure greenish; pygidium uniform obscure testaceous, with bright metallic-green lustre, having strong transverse interlacing scratches and conspicuous stiff yellow hairs; under surface and legs bright metallic green throughout; cephalic ridge with its free apex dilated and very obtuse, the clypeal process broad, parallel or feebly conical, not very high; prothorax relatively moderate, of the usual form but only a little more than three-fourths as wide as the elytra,

the medial prominence at the apical margin moderate, the surface punctureless; elytra large, a third longer than wide, the apex broad and very obtuse; side margins rarely narrowly green, generally without trace of that color, the marginal bead very full; surface dull throughout and without trace of punctuation, the two discal lines very obtuse and feeble, obsolete basally as usual; punctures toward the sides of the metasternum unusually coarse and with coarse and conspicuous pale hairs, the hind femora obliquely, coarsely scratched and with distinct coarse hairs; hind tarsi unusually thick, shorter than the tibiæ in both sexes. Length (♂ ♀) 24.0–28.5 mm.; width 13.0–15.8 mm. Texas. Four examples; one is labeled "Tennessee," but probably in error..... **texana** n. sp.

Body stout but more rhomboidal than in the preceding, the upper surface not quite so depressed, dull but paler green almost evenly throughout, the head, marginal thoracic bead and the mes-epimera bright metallic green; pronotum never with an entire marginal tawny stripe but generally with some remnants of it at various parts, the elytra with a broad and sharply defined, orange-tawny border from the base to the suture at apex, seldom anteriorly prolonged onto the solid green discal area and then only briefly; pygidium uniform testaceous, with thin metallic-green gloss, having deep scratch-like transverse interlacing and not very close-set lines and short, sparse and coarse but only moderately conspicuous hairs; under surface bright metallic green, the abdomen testaceous, with feeble greenish gloss, the legs metallic green, the hind femora sometimes slightly pallescent; cephalic ridge expanded at apex but more gradually than in the preceding, the clypeal process long and large, gradually expanded from base to the broadly truncate apex, but varying to more slender and parallel, never with converging sides; prothorax relatively larger but of the usual outline, impunctate and but little narrower than the elytra, the latter a fourth to two-fifths longer than wide, the sides moderately converging from base to the rather abruptly obtuse apex, never punctate, the sutural angles obliquely dentiform; anterior tibiæ sharply tridentate, the upper tooth minute in the male; hind tarsi (♂) as long as the tibiæ, shorter (♀), rather stout and compressed. Length (♂ ♀) 22.0–28.0 mm.; width 12.2–15.7 mm. Arizona (Tuçson, Phoenix and other southern localities). Seventeen examples..... **arizonica** n. sp.

Body of varying outline, stout in *obliqua*, notably narrow in the subspecific forms here described, the lateral beading of the pronotum less dilated basally, the elytra always pale tawny in color, with a triangular, posteriorly attenuate sutural green area.....4

4—Under surface deep polished metallic green, the abdomen testaceous throughout, with feebler metallic-green glaze. Form elongate, the upper surface opaque and obscure green, the sides of the pronotum and sometimes a short feeble ante-scutellar streak, tawny, the elytral green area occupying not quite the entire width at base, narrowing with rather ragged subarcuate outline posteriorly, very fine apically; head, side margin of the pronotum, legs and epimera bright polished green; pygidium testaceous, with thin bright green glaze; head

unusually large, fully two-fifths as wide as the prothorax, the ridge inclined upward, truncate, not apically dilated, the clypeal process long and gradually expanded to the sinuato-truncate apex; prothorax rather small, three-fourths as wide as the elytra, opaque and impunctate; epimera with the inner part reflexed and violaceous; elytra two-fifths longer than wide, feebly cuneiform, rapidly arcuato-truncate at apex, without trace of punctulation, the basal margin partially polished; pygidium with coarse and close-set, anastomosing transverse strigilation, evenly dense throughout, the hairs extremely minute and scarcely discoverable; metasternal punctures deep but arcuate and linear. Male with the abdomen feebly impressed along the middle, the anterior tibiæ not very slender, with two feeble but sharp external teeth, the apical process well developed, obliquely acute; hind tarsi unusually long, thick and compressed, distinctly longer than the tibiæ. Length (♂) 21.0 mm.; width 11.7–12.0 mm. Texas (Alpine) and Arizona,—Wickham..... **abdominalis** n. sp.

A—Nearly similar (♂) but shorter, the upper surface nearly similar throughout, the head not so large, of the usual size, the ridge similar, the clypeal horn long, more slender and parallel; prothorax relatively larger, fully four-fifths as wide as the elytra, which are not a fourth longer than wide, only feebly tapering and still more broadly subtruncate at apex, the two raised lines feeble; pygidium not or barely at all testaceous, but otherwise similar; the æneous-green lustre denser but bright and polished, the hairs much more distinct basally; anterior tibiæ with the middle tooth relatively more developed; hind tarsi more slender, not longer than the tibiæ. Length (♂) 17.8–21.0 mm.; width 10.0–12.5 mm. Mexico (Saltillo in Coahuila, near Chihuahua City and in Durango),—Wickham. The abdomen is more nearly solidly metallic but is generally testaceous along the middle..... ***discolor** n. subsp.

Under surface deep and uniform polished green, throughout, the upper surface as in the preceding, the pygidium not or scarcely testaceous under the strong metallic green glaze of the surface, differing from *abdominalis* in having the sparse hairs much longer, very coarse, pale and conspicuous; clypeal process high, large, truncate and usually parallel. Length (♀) 24.0–27.0 mm.; width 15.0–15.5 mm. Mexico (Durango and elsewhere). [*C. malina* Jans.]. ***obliqua** Burm.

A—Nearly similar but smaller, stout, similar in coloration above, except that the pronotum is more broadly tawny at the sides; head more than a third as wide as the prothorax, which is relatively smaller than in *obliqua* and barely three-fourths as wide as the elytra; clypeal process broken in the type but narrow and apparently long and parallel; prothorax more strongly and sharply angulate at the sides medially than in *obliqua;* elytra similar but rather more depressed and less broadly truncate at apex; pygidium imperfectly testaceous, with strong metallic green lustre, the hairs similarly rather long, coarse and pallidly glistening; under surface and legs throughout polished and dark green, without trace of æneous lustre; arcuate metasternal punctures coarse and deep, the hairs finer and less conspicuous than in *obliqua;* anterior tibiæ

(♀) rather stout, the upper tooth small but well formed and sharp; hind tarsi not as long as the tibiæ. Length (♀) 21.0 mm.; width 12.8 mm. Mexico (Saltillo in Coahuila),—Wickham.

***coahuilæ** n. subsp.

B—Similar to *coahuilæ* but narrower in build and with the clypeal horn always triangular, sometimes abbreviated and obtuse and with the pygidium solidly metallic-green, without discernible testaceous ground color, the hairs rather finer though long and distinct, but only visible toward base, the apical part glabrous: under surface and legs differing in color, being bright metallic greenish-æneous throughout; male with the anterior tibiæ slender, the teeth, except the apical, small and feeble, unequally spaced, the hind tarsi long and rather stout, longer than the tibiæ; female with the anterior tibiæ stouter, the teeth distinct and equally spaced; hind tarsi more slender but almost as long as the tibiæ. Length (♂♀) 17.5–22.0 mm.; width 9.8–12.7 mm. Mexico (Gonzales Junction and Irapuato, Guanajuato),—Wickham. Seven examples.

***viridicauda** n. subsp.

C—Rather stouter than either of the preceding subspecies and less cuneiform, similar in coloration throughout to *viridicauda*, except that there is barely a trace of any tawny color at the sides of the pronotum and that the elytra are opaque obscure green throughout, feebly pallescent toward the sides, the tawny regions of *viridicauda* with a fine obscure mottling of green and tawny tint; clypeal horn rather long but triangular. Length (♂) 22.5 mm.; width 12.8 mm. Mexico (Irapuato),—Wickham. . . . . ***commiscens** n. subsp.

5—Head smaller than in any other species, much less than a third as wide as the prothorax. Body feebly cuneiform from the base of the elytra, rather elongate, almost flat above, opaque and very dark velvety-green, the elytra abruptly orange-red along the sides and apex, without suffused discal paler tints, the pronotum in the type with a single small irregular pale area at the sides just before the middle; head shining, green, becoming testaceous anteriorly, the medial ridge becoming very slender apically and the clypeal horn moderate, a truncated triangle; prothorax with the sides converging evenly from base to apex and moderately, though very evenly, arcuate, impunctate, the apical umbo unusually prominent; elytra flat, fully two-fifths longer than wide, having some feeble traces of minute punctulation arranged serially, the elytral suture finely pallescent; the sides are almost straight and the apex rather abruptly truncate; pygidium metallic green in basal, becoming very abruptly pale testaceous in apical, half, everywhere rather closely and confluently strigilate, glabrous, but with some distinct short hairs near the base; under surface and legs polished metallic green, the posterior half of the meso- and meta-sternal episterna, femora and median line of the abdomen—impressed (♂)—testaceous; anterior tibiæ (♂) slender, the two lower teeth strong, the upper very small and feeble, obsolescent, the hind tarsi moderately slender, longer than the tibiæ. Length (♂) 19.0 mm.; width 11.6 mm. Virginia (Ash Grove).

debiliceps n. sp.

Head distinctly larger, a third to two-fifths as wide as the prothorax...6

6—Body elongate and narrower, very nearly twice as long as wide in the male.....7

Body stouter, much less than twice as long as wide in either sex.....9

7—Hind tarsi (♂) longer, distinctly longer than the tibiæ. Body elongate-rhomboidal, rather convex, very obscure uniform opaque olive-green above, with a narrow reddish marginal stripe on the elytra, attaining the sutural angles only very narrowly—very exceptional character—and without the least pallidity on the disk; pronotum with a single marginal bilobed pale spot before the middle; head shining, greenish-cupreous, the medial ridge parallel, not apically modified, the clypeal horn longer than wide, with its sides slightly converging to the truncate apex; prothorax but little wider than long, evenly convex, the apical umbo rather prominent; elytra cuneiform, the apex three-fourths as wide as the base; surface with partial series of very fine punctures; pygidium shining, feebly metallic-green in basal, abruptly testaceous in about apical, half, everywhere with close-set transverse and confluent strigilation; under surface and legs metallic green but not very intense, the parapleura, partially, femora and median impressed line of the abdomen testaceous; each abdominal segment is cuprascent at apex, the sixth testaceous at apex; anterior tibiæ slender, the upper tooth small and obsolescent; hind tarsi moderately thick and compressed. Length (♂) 20.5 mm.; width 11.0 mm. A single example from the Levette collection labeled "Indiana".....**longula** n. sp.

Hind tarsi (♂) much shorter; body smaller and still narrower.....8

8—Outline (♂) elongate-rhombiform, the hind body long and cuneiform, moderately convex, the upper surface obscure green and opaque, the sides and apex of the elytra with a sharply defined tawny margin, sometimes slightly prolonged forward near the suture and with the region about the scutellum faintly brownish; pronotum with an entire tawny external margin; head with the medial ridge slightly acuminate apically, the clypeal horn broad, not quite as long as wide, parabolic to subquadrate; prothorax but little narrower than the elytra, rather short, wider than long, the sides nearly straight throughout, or only so toward apex, having a feeble axial paler wisp on the basal lobe, the apical umbo very moderate; elytra almost twice as long as the prothorax, the apex scarcely more than two-thirds as wide as the base, sometimes having a few extremely minute scattered punctules; pygidium with the darker basal part rather nubilous, the uneven strigilation unusually sparse, becoming short and very sparse apically; under surface in great part testaceous, the sterna medially and the tarsi dark and metallic green; anterior tibiæ with the feeble upper tooth at a great distance from the second; hind tarsi unusually short, scarcely more than three-fourths as long as the tibiæ. Length (♂) 18.0 mm.; width 9.75 mm. Virginia (Norfolk). Two examples.....**angustula** n. sp.

Outline (♂) nearly similar but with the hind body rather less cuneate and with the elytra more rounded at apex, dark opaque green, the sides and apex of the elytra, prolonged anteriorly slightly on the disk,

tawny-yellow, the sides of the pronotum narrowly and irregularly tawny; head nearly as in the preceding, the medial ridge acuminate apically, the clypeal horn short and subparabolic in the type; prothorax more rounded at the sides than in the preceding, becoming more oblique and straighter apically; elytra nearly similar, excepting the much more evenly rounded and rather narrow apex; pygidium more finely and closely strigilate throughout, with the green and testaceous parts abruptly defined, the former lobed medially; minute sparse hairs are visible throughout; under surface in part testaceous, the abdomen polished green, pallid along the middle, the hind coxal plates brilliantly cupreous, the femora testaceous; anterior tibiæ bidentate; hind tarsi fully as long as the tibiæ. Length (♂) 15.0 mm.; width 8.2 mm. North Carolina.....**parvula** n. sp.

9—Outline more or less stout, feebly convex and rhombiform, the elytra not serially punctulate; upper surface opaque, the pronotum obscure green, with tawny side margins, the elytra always with tawny margins and apex, but with the disk varying from solid obscure green to tawny with merely an oblique nubilously green streak from the middle of the base to the middle of the suture, these extremes of coloration rather unusual; head shining, green, the clypeal horn always notably small, parabolic to a truncate triangle; prothorax with subevenly arcuate and converging sides from base to apex, sometimes with a slender pallid streak on the basal lobe, always very nearly as wide as the elytra, which are but slightly longer than wide, with the sides distinctly converging from base to the rather broadly subtruncate apex and straight, becoming more or less feebly arcuate posteriorly; pygidium with green metallic basal, and testaceous apical, part, the green moderately prolonged medially; transverse strigilation rather loose as a rule, generally becoming short sparse transverse lines apically, the pubescence sparse, varying from minute to coarse, longer and distinct hairs; under surface extremely variable, almost wholly metallic green to, in large part, pallid, the femora always pale; anterior tibiæ usually with three evident teeth in the female, the uppermost generally but not always obsolete in the longer and more slender tibia of the male; hind tarsi about as long as the tibiæ (♂), or more or less distinctly shorter (♀). Length (26 ♂, 21 ♀) 16.5–22.0 mm.; width 9.3–12.4 mm. New York to Virginia; also Tennessee River and Louisiana (Baton Rouge). Very common and variable in color; the specimens from the western regions are rather larger and more broadly oblong-oval than those from the eastern slopes of the Appalachian system. [*Scarabæus nitidus* Linn. and *C. flagranticeps* Voet.].....**nitida** Linn.

A—Similar to *nitida* but larger, opaque green, similarly margined with tawny yellow, the elytra each with a regular oblique tawny vitta from within the humerus to the apex at the suture; pygidium and under surface nearly similar, the hind tarsi however notably stouter, more compressed and proportionally shorter; anterior tibiæ (♀) equal in length to the tarsi, distinctly tridentate. Length (♀) 24.0 mm.; width 14.0 mm. Texas..**ornata** n. subsp.

B—Form more oblong-oval, the opaque green of the preceding species

replaced by dark red-brown, becoming darker and greenish toward the sharp line demarcating the lateral tawny stripe on both the pronotum and elytra; head proportionally a little smaller; pygidium similar, except that the green basal part is not sharply defined and the hairs are long, very coarse and conspicuous; under surface pallid excepting the middle of the sterna; anterior tibiæ of the female not quite as long as the tarsi, with two large teeth, the usual upper tooth very minute to obsolete; hind tarsi much less stout than in *ornata* and not so abbreviated. Length (♀) 23.0 mm.; width 13.3 mm. A single example unlabeled in the Levette collection..... **tibialis** n. subsp.

C—Nearly similar to *nitida* but with the sides of the elytra straighter and the apex more abruptly transverse, the entire pronotum and elytra, excepting a sharply defined tawny lateral margin, deep, obscure and very uniform velvety-green; under surface nearly similar; pygidium different in color, the basal green area prolonged medially to the apex, there inclosing a small elongate pallid spot, the surface deeply impressed at each side of the middle, perhaps adventitiously in the type; hind tarsi very short. Length (♀) 20.0 mm.; width 10.8 mm. Missouri (St. Louis).

pygidialis n. subsp.

Outline rather more oblong-oval, the elytra with partial series of fine punctures; upper surface obscure green, opaque, with tawny side margins as in *nitida*, but with the disk of the elytra seldom much variegated with tawny, generally solidly green, becoming brownish toward the scutellum; head well developed, more than a third as wide as the prothorax, with the longitudinal ridge as in *nitida*, the clypeal horn, however, much larger, longer than wide, parallel to slightly conical, broadly truncate at apex; prothorax very nearly as wide as the elytra, with the tawny margin sometimes not attaining the base, the converging sides subevenly arcuate, the apical umbo moderate; elytra a fourth longer than wide, the sides feebly converging from the base, becoming arcuate for a considerable distance from the apex, which is subtruncate as usual; pygidium nearly as in *nitida*, but with the green basal part not so abruptly defined; under surface in great part more or less pallid, with feeble metallic-green gloss, the anterior tibiæ (♂) tridentate, or shorter and stouter (♀), with the three teeth stouter and less widely separated; hind tarsi in the former long, thick and compressed, very much longer than the tibiæ, shorter in the female. Length (♂ ♀) 22.5–23.5 mm.; width 12.5–13.0 mm. Texas..... **longitarsis** n. sp.

A—Similar to *longitarsis* but not quite so large and with the series of punctures at each side of both of the raised lines much stronger and distinct, the two included elytral lines rather strongly embossed, somewhat as in the Mexican *pauperula* Burm.; tawny elytral margins entire, the obscure opaque green discal tint not variegated, the lateral pale stripe of the pronotum not or imperfectly attaining the base; clypeal horn large, subquadrate or a long truncate triangle, but never having the strut-like longitudinal ridge at base as in the *obliqua* section; under surface and pygidium nearly as in

the preceding; anterior tibiæ (♂) strongly tridentate, the upper tooth half the size of the second and acute, the hind tarsi almost as long and compressed as in *longitarsis*, distinctly longer than the tibiæ, equal in length to the latter in the female, where the upper tooth is feebler than in the male in the single specimen at hand. Length (♂♀) 18.5–21.0 mm.; width 10.5–12.0 mm. Texas. The type example is a female, which is sometimes smaller than the male. Three examples.....**seriella** n. subsp.

10—Body small in size, oblong-suboval, opaque and deep velvety-black throughout above, the under surface and legs shining, black; head shining, deeply concave, all the margins strongly elevated, the median ridge narrow and sharp, the concavity sparsely punctate, the upturned clypeal apex broadly lobed; prothorax moderate, scarcely more than three-fourths as wide as the elytra, widest at base, the moderately beaded sides broadly angulate at the middle; epimera strongly punctured throughout and with very coarse hair; elytra a fourth longer than wide, the sides to beyond the middle parallel, then broadly arcuate to the broadly rounded external angles, the sinus behind the humeri very long; marginal bead very fine and abrupt as usual; raised discal lines obsolete, the surface punctureless; pygidium shining, black, with feeble violaceous lustre, having transverse interlacing strigilation, rather well separated but becoming fine apically, the hairs sparse and very short but coarse; anterior tibiæ distinctly tridentate. Length (♀) 15.5 mm.; width 9.2 mm. Arizona (San Bernardino Ranch, Cochise Co.),—F. H. Snow. [*Gymnetis impius* Fall].....**impia** Fall

This genus is, as it were, in a state of unstable equilibrium, so far as definite taxonomic units are concerned, and large series, carefully collected in various recorded localities, will be necessary before even an approximate solution of the question can be attained. It might be thought that the anterior tibiæ could be employed advantageously at least in separating the sexes, but, although generally stouter and more strongly tridentate in the female, I have found examples now assigned to *nitida*, for example, in which they are bidentate in what ought to be the female because of the short hind tarsi and more abbreviated outline of the body, and in a female specimen of *subcastanea* Bates, before me, the right fore tibia has no evident external tooth except the apical, while the left is very distinctly tridentate. The hind tarsi are frequently very stout and compressed, especially in species allied to the true *mutabilis*, which is a uniformly opaque olive-green species, without trace of pale elytral margination, confined to southern Mexico and Central America and not at all resembling species of the *sobrina* and *obliqua* types, extending north of our Mexican boundary

and hitherto confounded with it. *Sobrina* is a species distinct from *obliqua*, as shown not only by type of ornamentation, but by a constant difference in the clypeal horn, which is much smaller, shorter and more triangular in *sobrina*. There is great variability intraspecifically in the form of this process, but I find there are bounds to this variability in each species; in *arizonica*, for instance, it is always very conspicuous and longer than wide, but varies only from the parallel and narrower, to the very strongly apically expanded and broadly truncate, form, never becoming small and triangular as it is in *sobrina*, to which *arizonica* is otherwise related.

The coloration of the elytra in the *obliqua* type is surprisingly constant, but in *nitida* it is extremely variable, in fact not only in this direction, but in sculpture, pubescence, frequent symmetrical impressions of the pygidium and structure of the anterior tibiæ, the large series of *nitida* in my collection has cost me a disproportionate expenditure of time and patience, with frequent doing and undoing of efforts to guess what nature has really accomplished in the way of evolving species in this group. I finally gave up the problem and left the material in a single piebald series, except the three examples serving as types of the subspecies proposed above, which seemed too exceptional in one or more ways to form part of the series from any rational viewpoint. Those forms called species above, I thoroughly believe to have that status, the only point involving doubt being the mutual relationship of *angustula* and *parvula*, and it is not well to be too positive in such a case as this. The *punctata* section of *Pelidnota* is almost identical in regard to uncertainties of taxonomic values.

In looking over the Mexican species, many of which are assigned in error to *mutabilis* as simple varieties by Mr. Bates, it becomes evident that *palliata* G. and P., and *aurantiaca* Bates, are mere varieties of *sobrina*, which is a distinct species, and that *robusta* Bates, is a variety of *obliqua* Burm.,—another distinct species as indicated above. I thought at first that *aurantiaca* might be identical with the form described above as *arizonica*, as its general appearance is strikingly similar, but the description of the clypeal horn as triangular to quadrate shows that it is not the same as *arizonica*, where the horn is very large, nearly always strongly

expanding from base to apex and in its least developed stage not less than parallel; it is also probable that the typical *aurantiaca* has a densely metallic abdomen, while in *arizonica* it is constantly testaceous, with thin metallic gloss; this latter coloration is specific in nature, as shown by its absolute constancy in ample series at hand, though disregarded by Mr. Bates as a casual abnormality. Similarly, it seemed possible that the species named *texana* above might be the same as *robusta* Bates, described as from Sonora, but the very feeble nubilous greenish tint gradually appearing toward the elytral suture in *texana*, could not be referred to as a "plaga," which indicates something sharply defined, as it is in *obliqua* and all its related forms; besides this, the lateral bead of the pronotum is decidedly still broader basally in *texana* than in *obliqua*, or any of its subspecies.

The following are some additional Gymnetids, which seem to be hitherto undescribed:

***Amithao sparsus** n. sp.—Form oblong, parallel, depressed and intense opaque velvety black above, sparsely and evenly sprinkled throughout, as well as on the head and pygidium, with minute white points, which have in general a somewhat serial arrangement on the elytra; under surface and legs deep shining black, all except the median parts, tibiæ and tarsi, sprinkled with spots of whitish tomentum, slightly less minute than those of the upper surface; head in general structure, impression and form of the clypeus, exactly as in *albopictus*, except that the punctures are smaller, shallow and each filled with a small spot of pale tomentum, the erect hairs much shorter and more slender and the sinus of the clypeal apex narrower and shallower; prothorax wider than long, though barely more than two-thirds as wide as the elytra, the converging sides obtusely angulate at about the middle, the fine and evenly distributed white points each completely filling a very shallow puncture; elytra with peculiarly parallel and nearly straight sides from base to the abruptly rounded external angles, the apex broadly and very obtusely rounded; small tomentose specks evenly distributed but of various forms, some slightly elongate, seriate in a little more than inner half, confused thence to the sides; pygidium extremely densely scabrous and dull, with short sparse erect black hairs and small whitish spots of tomentum throughout; under surface, except medially, rather coarsely punctured but at all deeply only on the sterna, each puncture filled with tomentum; hind tarsi (♂) scarcely three-fourths as long as the tibiæ, the anterior tibiæ slender, edentate, the terminal process moderate, acute. Length (♂) 22.8 mm.; width 11.8 mm. Panama (Culebra Cut),—Gaillard.

This species is very different from any other known to me because of the very opaque velvety-black surface, evenly sprinkled through-

out with very small specks of whitish tomentum; the anterior tibiæ of the male have a rather distinct obtuse vestige of one external tooth. The antennal club is distinctly longer than the entire stem, being a little longer and thinner than in the polished black *albopictus* V de P.

***Cotinis mutabilis** ssp. **ovicornuta** nov.—Similar to *mutabilis* and deep opaque olive-green throughout above, the head and under surface polished greenish-bronze; form more elongate and larger in size; head (♀) a little larger, two-fifths as wide as the prothorax, the cephalic process nearly similar but more inclined upward, gradually slightly broader, the apex truncate; clypeal horn of peculiar form, large, broad, with parallel arcuate sides, the apex truncate medially, with very broadly rounded angles, the base constricted; prothorax as in *mutabilis* but with a narrower basal lobe; elytra similarly very slightly narrowed from the base but rather more elongate; pygidium with deep loose and transversely interlacing grooves, finer apically, the sparse hairs coarse and conspicuous basally; under surface as in *mutabilis*, the apical part of the sternal process rather shorter and more dilated; anterior tibiæ stout, tridentate; hind tarsi thick, compressed, slightly shorter than the tibiæ. Length (♀) 30 mm.; width 17.7 mm. Honduras (San Pedro Sula).

It would be interesting to know approximately the degree of constancy of the very exceptional outline of the clypeal horn, but, even if an individual aberration in the type here described, the body is larger and more elongate than in *mutabilis*.

***Cotinis capito** n. sp.—Rather stout, subrhomboidal, moderately convex, opaque and uniform brownish-black above, the head shining, the under surface polished, deep rufo-piceous, the hind femora also piceous, the middle of the sterna black; head much larger than usual, more than two-fifths as wide as the prothorax, the ridge sloping upward, gradually expanding toward the truncate apex, the clypeal horn large, higher than wide, gradually expanding from base to the broadly truncate apex, the strut-like ridge posteriorly from it base strongly elevated; antennal club barely longer than the preceding six joints; prothorax nearly as in *atrata* but rather broader; elytra also as in *atrata* but less deep black and with the feeble dorsal ridges behind the middle more evident, without trace of punctures; pygidium shining, blackish, gradually rufescent basally, the wavy incised lines everywhere unusually close-set and interlacing, the sparse hairs visible basally very short; anterior tibiæ (♂) rather stout, tridentate, the upper tooth very small but acute and at a longer distance from the second than the latter is from the third; hind tarsi moderately thick and compressed, barely as long as the tibiæ. Length (♂) 27.5 mm.; width 15.4 mm. Mexico (Tapachula).

The narrow impression along the middle of the abdomen in the type and the unequally spaced teeth of the anterior tibiæ, indicate

the male, so that the hind tarsi in this species, which seems to be rather isolated, are shorter than usual; the head is much larger than in any of the forms of *atrata* and the clypeal horn very different.

The form identified by Mr. Bates as *nigrorubra* G.&P., is evidently not the same as *capito*, differing in coloration, as well as in its notably larger size. The clypeal process in *atrata* is always small, triangular or parabolic, perhaps quadrate as an extreme, though I have not seen that development; it seems to be more constant than in some other species, but less so than in *lebasi*.

***Cotinis lebasi** ssp. **panamensis** nov.—Similar to *lebasi* in general features but shorter, with more rapidly cuneiform hind body; upper surface densely opaque, very obscure olivaceous green, shading broadly postero-externally into red-brown, the pygidium obscure red-brown, similarly opaque and sculptureless, except near the ends and with the lower margin likewise narrowly metallic and shining; under surface polished, very obscure bronze, head barely a third as wide as the prothorax, shining, greenish-bronze, strongly and conspicuously punctured, the suture between the front and clypeus more distinct than in any other species and accentuated by an abrupt depression of the clypeus below the level of the front; frontal ridge more punctured than usual and with its tip free for only a very short distance, the apex feebly inflated; clypeal horn small and triangular; prothorax as in *lebasi*, except that the green gradually becomes obscure brownish along the sides; elytra similar, except in coloration and in the greater attenuation, the apex being barely more than two-thirds as wide as the base; sternal punctures coarse and conspicuous, the hind tarsal plate very feebly sculptured in fine sparse oblique wavy lines; anterior tibiæ stout, tridentate as usual. Length (♀) 28 mm.; width 16.4–16.6 mm. Panama (Culebra Cut),—Gaillard.

The two females at hand have been compared with a single female of *lebasi*, marked "Chiriqui," which seems to agree very well with that originally described from Carthagena, Colombia. There is no trace of the brilliant coppery-red under surface of *lebasi*, and the cephalic ridge has its apex very much less strongly expanded; the sternal process is similarly very broad.

Tribe CETONIINI.

This tribe includes all the American species classified under the title "Cetonides vraies" by Lacordaire and they were all assigned by him to the genus *Euryomia*, with the statement that *Euphoria* was simply a name for the species of a special zoological region. The different forms assumed by the clypeus were enumerated as showing the impossibility of giving *Euphoria* any definite standing,

the conformation of that part being similar in certain species to that characterizing several old world genera. In studying our species, however, it becomes easy to define a number of separate genera based upon the clypeus, sternal process and tarsi, but to differentiate these genera from the old world genera in every case may be a difficulty not quite so readily overcome. Of this it is impossible for me to say more at the present time, owing to the lack of sufficient foreign material. The North and South American genera can be defined in few terms as follows:

Mesosternal process forming a smooth and generally glabrous knob between the coxæ.....2

Mesosternal process always densely pubescent, its anterior end diversified in form.....4

2—Pronotum having an entire marginal bead at the sides; clypeus varying in form from obtusely acuminate to broadly obtuse, sometimes bilobed, at tip; pronotum sinuate to truncate medially at base; hind tarsi variable in length but generally short, sometimes strongly compressed. (*Erirhipis* Burm.) [Type *Cetonia sepulchralis* Fabr.] **Euphoria**

Pronotum not margined at the sides, sinuate medially at base; tarsi extremely short.....3

3—Clypeus having the usual form in *Euphoria*, broad and obtuse at apex; body very pubescent; hind tibiæ (♂) with an internal brush of long dense hairs, the pygidium of that sex with two nodal points instead of the usual one. [Type *Euphoria hirtipes* Horn]..**Euphoriaspis**

Clypeus broadly sinuato-truncate at apex, with an abrupt internally sharp dentiform process at each side; tibiæ in both sexes with the usual internal loose fringe of setæ; hind tarsi very short, compact and compressed; elytra devoid of sculpture. [Type *Euphoria hera* Burm.]..... ***Euphoriopsis**

4—Clypeus broadly sinuate and laterally dentate at apex.....5

Clypeus at apex with four small acutely spiniform teeth, the two median approximate and more advanced than the lateral.....6

5—Body very hairy above and beneath, the elytra rather depressed; pronotum not or imperfectly margined at the sides, the median line conspicuously elevated. [Type *Scarabæus hirtellus* Linn.]. **Tropinota**

Body subglabrous, moderately pubescent beneath, the elytra convex and very differently sculptured; pronotum with a distinct and entire lateral bead, without trace of elvated median line. [Type *Euphoria verticalis* Horn].....**Anatropis**

6—Body oblong-oval, convex, usually with abundant pubescence, at least beneath; pronotum without an elevated median line. [Type *Cetonia areata* Fabr.].....**Stephanucha**

These genera are very unequal in extent, all but *Euphoria* being based upon one to three or four species, but, at any rate, this

generic subdivision renders possible a more accurate definition of *Euphoria* than would otherwise be possible. *Tropinota* is common to Europe and America, a species belonging unmistakably to the genus being represented in my collection by a small series, said to have been taken in Utah; it was described by Say under the name *Cetonia vestita*. *Euphoriopsis* (n. gen.) is so far only known from South America and will therefore not be further mentioned; the type is well known in nearly all collections.

The genus *Chlorixanthe* of Bates also belongs to this group of genera, but is omitted above as I have no example of *Euphoria flavoviridis* Thoms., forming its unique type; it belongs by mesosternal and clypeal structure, with the *Euphoria* section as above defined, but differs from any other genus in several structural features, among others the produced pronotal base near the scutellum, the very approximate last two anterior tibial teeth and the complete absence of raised elytral costulæ; the short tarsi, with closely compacted joints, are known, however, in several other genera, as well as some species of true *Euphoria*.

The European *Oxythyrea* Muls., greatly resembles some species of *Euphoria*, and the clypeus is of a form frequently seen in that genus, but the mesosternal process is different, being transversely eroded, scabrous and pubescent, with its anterior face smooth and convex; the anterior tibiæ are simply bidentate in both sexes and the hind tarsi are unusually long and slender for this group.

Euphoria Burm.

In this genus the body is of moderate to small size, oblong-suboval to elongate-subrhombiform in outline and generally subglabrous, or with moderate pubescence, though this becomes conspicuous in certain species such as *basalis* and *pulchella*. The clypeus in the vast majority of species is broad, subquadrate, with rounded angles, the apex but feebly reflexed and slightly sinuate toward the middle, but in such forms as *lesueuri* and *spissitarsis*, the sides are rounded inwardly very gradually toward the tip, which is rather approximately and sharply bilobed; in the *pulchella* type the narrowed apex is somewhat similar though more briefly and obtusely bilobed, and the surface is without elevation at the side margins; in this *pulchella* and *biguttata* section, the clypeus is

nearly flat and obtusely cuneiform and, as an extreme of this type, *canescens* has the most remarkable clypeus of the genus, it being flat, elongate, and triangular, with the apex narrowly truncate; these various forms are united by gradual intergrades, so that they cannot in any instance serve for more than group distinction. The anterior tibiæ are usually tridentate in both sexes, with the upper tooth feebler in the male, but sometimes both the external teeth become virtually obsolete in that sex, as in the isolated *geminata* of Chevrolat. The pronotal base, at the scutellum, is almost invariably sinuate, but in some forms, such as *kerni* and *æstuosa*, the base along the scutellum is broadly arcuate or subtruncate, without even a decided trace of a sinus in any known individual. *Euphoria* is an exceedingly difficult genus in which to fix definitely the value of recognizable differences among the very numerous taxonomic forms, and for this reason some of those named below are given the provisional status of subspecies. All the Mexican and Central American forms in my collection are included; they are assignable to the following eight subgeneric groups:

Antennal club much longer in the male than in the female; clypeus large, subquadrate, generally distinctly elevated at the sides as well as at apex.....2

Antennal club usually less developed and never much longer in the male, being equal in the sexes or very nearly; pronotum strongly sinuate at the scutellum; anterior tibiæ tridentate in both sexes.....7

2—Base of the pronotum abruptly and distinctly sinuate at the middle; anterior tibiæ distinctly tridentate in both sexes.....3

Base evenly arcuate to sinuato-truncate at the middle, the feble sinus, if present, not sharply limited at the sides.....4

3—Pronotum glabrous or with inconspicuous hairs, which, if more abundant, as in *rufina*, are regularly distributed. Group I (*fulgida*)

Pronotum densely and very irregularly pubescent....Group II (*inda*)

4—Anterior tibiæ tridentate in both sexes.....5

Anterior tibiæ bidentate (♂) or tridentate (♀), sometimes without external teeth in the male.....6

5—The tibial teeth well separated; body without tomentose spots at any part.....Group III (*kerni*)

The teeth approximate and more apical; body with conspicuous tomentose spots.....Group IV (*subtomentosa*)

6—Body with or without tomentose spots, but never having them on the elytra, the pronotum and elytra more or less evidently vittate, the vittæ either solid as in *geminata*, or composed of comminuted small spots as in *arizonica*.....Group V (*geminata*)

7—Clypeus large, broadly obtuse at apex as a rule. Group VI (*sepulchralis*)
Clypeus nearly flat, generally narrowed apically and more or less bilobate at apex; body often very small in size, conspicuously pubescent to almost completely glabrous.....8
8—Anterior tibiæ tridentate; pygidium with concentric sculpture; pronotum never having discal tomentose spots, always sinuate medially at base; elytral costæ variably developed.
Group VII (*biguttata*)
Anterior tibiæ bidentate; pygidium with crescentic annular punctures; pronotum with two discal vittæ composed of detached tomentose spots, the base not sinuate medially; elytral costæ very feeble.
Group VIII (*insignis*)

These groups appear to be distinct among themselves and, as I can find no intermediates, I presume that they are subgeneric in nature. Possibly *basalis* or *fascifera* might be regarded as an additional group; they really have very little mutual affinity, apart from the general scheme of elytral ornamentation, but that this should be so similar in the two is very remarkable.

Group I.

Subgenus **Erirhipis** Burm.

There was considerable justification in the generic separation of *fulgida* from *sepulchralis*, and if *Erirhipis* is not of full generic value as maintained by Burmeister, it is certainly subgeneric; besides the structural features mentioned above, there is a distinct difference of facies, not only pertaining to *fulgida*, with its allied forms, but to all the other groups as limited above. The species in my collection may be recognized by the following characters:

Clypeus large, parallel, with arcuate sides and broadly rounded, slightly reflexed apex, which is more or less evidently, though always feebly, sinuate at the middle.....2
Clypeus longer, parabolic, the more narrowed apex moderately reflexed and obtusely, rather approximately bidentate.....7
2—Entire upper surface highly polished and metallic in lustre.....3
Entire upper surface opaque, the lower surface shining.....6
3—Pronotum without a pale lateral margin; legs dark, the femora in no part paler. Body oblong-elongate, subparallel, feebly convex, bright green above, the under surface and legs darker green; sides of the elytra indigaceous; head small, strongly and rather closely punctate, the two more punctured frontal areas moderately dense, the clypeal margin truncate medially; antennal club (♂) a little longer than the stem, nearly black; prothorax a third wider than long, the sides nearly straight, feebly converging to the middle, then more strongly

to the apex, finely, feebly serrulate because of the punctuation; surface evenly convex, the punctures fine and sparse, gradually becoming coarse and close but arcuate and only moderately deep toward the sides; scutellum long and aciculate, smooth; elytra nearly as in *fulgida* but more parallel and with a longer and shallower subbasal sinus; tomentose spots very small and few in number; pygidium (♂) shining, umbonate below the middle, finely sculptured in wavy concentric lines, with a tomentose spot at each side; abdomen with a minute tomentose spot at each side of the dorsal surface of each segment; hind tarsi very nearly as long as the tibiæ; abdomen feebly impressed along the middle in the male. Length (♂) 15.8 mm.; width 9.0 mm. Arizona (Huachuca Mts.).....**holochloris** Fall

Pronotum with a pallid lateral margin; femora pale, at least in large part; clypeus more distinctly sinuate at the middle of the apex.....4

4—Inner elytral costa evident and subequal almost throughout the length. Body small and narrower, elongate-rhomboidal and feebly convex, bright green above and beneath, the abdomen rufescent, the femora rufous throughout; pale thoracic margin very narrow, sometimes incomplete, the sides of the elytra pale brownish-red; head with sparse and very moderate punctures, the denser areas of the front pubescent; prothorax nearly as in the preceding but with stronger and deeper punctures; scutellum long, smooth, very acute at tip; elytra gradually narrowed from the base to the obtuse apex, the lateral sinus deep; tomentose spots more or less distinct in short transverse lines behind the middle; punctures larger, closer and more conspicuous than in any other species of this section, the punctures annular, open behind and umbilicate basally, forming long wavy lines posteriorly at the sides and more arcuate though irregular toward the suture, everywhere umbilicate, the hairs minute and sparse; pygidium having four tomentose basal spots and with coarse arcuate incised lines, umbonate near the apex (♂), not umbonate, more narrowly rounded at apex and with the lines more widely separated (♀); hind tarsi rather slender; abdomen moderately impressed along the middle in the male. Length (♂♀) 12.0–14.6 mm.; width 6.5–7.8 mm. Florida (Marion County and Palm Beach). Four examples.....**limbalis** Fall

Inner elytral costa only evident behind the middle.....5

5—Abdomen and pygidium without trace of tomentose spots. Body (♀) oblong-suboval, depressed above and very dark indigo-blue throughout, except the side margins and two small basal spots on the pronotum, which are pale red-brown, the sides of the elytra nubilously red-brown except basally; under surface blue-black, the legs black, the femora in part rufous; head nearly as in *fulgida*, but with coarser and deeper punctures, the frontal areas with densely crowded punctures; prothorax more than a third wider than long, the strongly converging sides from base to apex almost evenly arcuate; punctures small and sparse, becoming coarse and closer laterally; scutellum smooth, moderately acute at tip; elytra a fourth longer than wide, but little narrowed at the broadly obtuse apex, the lateral sinus deep; tomentose spots small though numerous, especially

evident in two transverse lines internally at and well behind the middle; inner costa much feebler than the outer; sculpture nearly as in *fulgida;* pygidium (♀) very feebly and evenly convex, with deep wavy anastomosing lines, blackish-blue in color, with two well separated apical red spots; abdomen without trace of tomentose spots above or below; hind tarsi rather thick. Length (♀) 16.2 mm.; width 9.5 mm. Texas.....**fuscocyanea** n. sp.

Abdomen with two tomentose spots arranged obliquely toward the sides of each segment, the pygidium at base with four, or rarely but two, such spots, which are more rounded. Body (♀) more elongate-rhomboidal than in the preceding, still more so in the male, feebly convex, polished, pale green to blue-green, the green tint sometimes largely replaced by coppery-brown, often completely on the elytra but more seldom on the pronotum, the sides of the elytra broadly and nubilously red-brown; under surface polished green to bronzy, the legs pale, with the tarsi alone black; head rather sparsely punctate, except in the oblique dense frontal areas, the punctures usually coarser and deeper in the female; prothorax a third to two-fifths wider than long, the converging sides feebly arcuate, more so at about the middle, the side margins and frequently a very nubilous transverse area, which is often bimaculose, at the middle of the base. paler, the punctures small and sparse, becoming coarse, closer and very irregular as a rule toward the sides; scutellum smooth, rather sharply punctate; elytra barely a fourth longer than wide, a little longer relatively in the male, the inner costa very feeble and sometimes obliterated; punctures long and linear, arcuate internally, small basally, everywhere superficial and scarcely umbilicate, the erect sparse hairs very minute; tomentose spots small, sparse, sometimes wholly wanting, occasionally forming a rather distinct transverse series internally at about the middle, this line marking the anterior limit of the postero-internal depressed area; pygidium greenish-black, with the usual sculpture of the preceding species, the apex with a large subquadrate rufous area; abdomen medially deeply and conspicuously impressed in the male, except posteriorly; hind tarsi moderate, rather stout in the female. Length (♂♀) 14.0–16.5 mm.; width 8.0–9.7 mm. Connecticut to Michigan, Kansas and Texas. Twenty-six specimens. [*Cetonia fulgida* Fabr.]
fulgida Fabr.

6—Body devoid of tomentose areas, except a few very small and sparse on the elytra, generally more densely aggregated along the apices, obscure opaque sericeous-green to deep red-brown above, polished obscure green beneath, the abdomen pale piceous-brown; upper surface with minute sparse hairs, longer and rather conspicuous on the pygidium and still more so on the sterna and at the sides of the abdomen; legs pale, with feeble greenish lustre, the tarsi nearly black; head rather closely punctate and distinctly pubescent, the clypeus unusually concave and with the parallel sides strongly arcuate; prothorax short, one-half or more wider than long, trapezoidal, with feebly arcuate sides, the small punctures rather strong, not much closer but sensibly larger laterally, largely wanting along the

median line; scutellum acute, with a very few small punctures; elytra slightly cuneiform, feebly convex, obtuse at apex, the two costules feeble; punctures shallow, lineiform or arcuate; pygidium with interlacing concentric incised lines, umbonate at apical fourth or fifth (♂), or feebly prominent nearer the apex (♀); tarsi rather short, not very thick; anterior tibial teeth long in both sexes; male much the smaller and more slender. Length (♂ ♀) 12.0–14.7 mm.; width 6.2–8 4 mm. New York to Maryland. [*Cetonia herbacea* Oliv., *antennata* G. & P. and *pubera* Gyll.]..... **herbacea** Oliv.

Body wholly without tomentose spots on any part of the surface, dark olive green and opaque above, without distinct pubescence, except the minute hairs toward the sides of the pronotum, the surface there narrowly polished and metallic green; on the pygidium the coarse pale hairs are sparse and short but distinct; under surface and legs shining, brownish, with thin green lustre and rather long hairs, the latter sparse on the abdomen except at the sides; tarsi rather slender, black, the posterior as long as the tibiæ in the male; head shining as usual, strongly punctured, formed as in *fulgida*, glabrous, with moderate hairs on the front; prothorax slightly wider than long, the sides feebly arcuate, rather more so medially as usual; punctures very minute and remote, becoming rather large, close and lineiform toward the sides; scutellum dull and punctureless; elytra feebly cuneiform, with obtusely rounded apex, the two costules broad and feebly convex, each clearly defined by a row of small, obliquely arcuate punctures at each side, with a similar double row nearer the sides, the flanks transversely rugose; surface with extremely few small red maculations; pygidium testaceous, with thin green lustre, the interlacing incised lines circularly arranged as usual about the umbo, which is very obtuse at apical third; sterna with long waving incised lines. Length (♂) 14.5 mm.; width 8.0 mm. Mexico. [*Cetonia submaculosa* G. & P.]..... ***submaculosa** G. & P.

7—Upper surface shining throughout, the pronotum with tomentose margin within the beading; clypeus more strongly reflexed and sinuate at apex in the male than in the female, the lobes obtusely dentiform in the former as a rule..... 8

Upper surface at least in part opaque; pronotum not tomentose at the sides..... 10

8—Sutural angles of the elytra obtuse, not denticulate in either sex. Body elongate, feebly rhomboidal, feebly convex, shining, rufotestaceous in color, the pronotum with an elongate nubilous discal black spot at each side; pubescence yellowish, short but abundant, coarse and distinct, usually rather long medio-basally on the elytra, longer and dense beneath, except on the abdomen; head closely, moderately punctate, the sides as well as apex of the clypeus distinctly elevated, the clypeus subquadrate, shorter than wide, with short sparse hairs, those of the vertex long and dense; prothorax trapezoidal, the sides medially obtusely angulate, thence to the base distinctly sinuate and diverging; basal angles obtuse but not rounded; sides yellow-tomentose, the punctures moderate, gradually sparse medially, dense but not larger toward the sides, where they are

shallow and tend to form oblique wavy lines; scutellum smooth, with a few small punctures near each side; elytra slightly and equally cuneiform in the sexes, elongate. the costæ smooth, obtusely and moderately elevated, the punctures not dense, large, in the form of very irregularly arcuate incised lines, the sutural interval with two longitudinal partial incised lines in addition; on the flanks the transverse confluent incised lines are moderately separated longitudinally; pygidium (♂) broadly tumid toward the median line but not umbonate, the irregular incised lines separated, the pubescence short, not dense; surface with a large solid tomentose spot at each side, the inner margin of which is nicked at the middle, or (♀) more nearly flat, more angulate at apex, with still stronger and more distant incised lines, the lateral tomentose spots smaller and more disintegrated; hind tarsi rather thick, subsimilar in the sexes; antennal club a little longer (♂) or shorter (♀) than the stem. Length (3 ♂, 5 ♀) 12.0–13.7 mm.; width 6.4–7.6 mm. New Mexico and Arizona (Baboquivari, Santa Rita and Huachuca Mts.)....**testacea** n. sp.

Sutural angles of the elytra denticulate, more strongly in the male; pronotum without discal dark spots.....9

9—Body oblong-suboval, moderately convex, shining dark and piceous throughout, sometimes with very feeble greenish lustre; hairs sparse, coarse; head with rather strong close punctures; clypeus (♀) subquadrate, barely shorter than wide, the sides rounding from near the middle, slightly elevated, the apex thinner, distinctly reflexed, the two obtuse prominences separated by much less than half the total width; prothorax nearly as long as wide, the sides feebly converging in basal, rapidly in apical, half; punctures close-set, very moderate in size but deep, not obliquely united laterally, the marginal tomentum well developed; scutellum with strong scattered punctures except medio-basally; elytra with linearly arcuate punctures, transverse and deeper at the sides, the costæ moderate, obtuse, smooth or with minute remote punctures, the cretaceous spots numerous, one transversely sinuous near the middle and one apical and arcuate, conspicuous; pygidium very feebly, evenly convex, with deep and rather close-set, irregular incised lines and a large reniform cretaceous spot near each side, the hairs numerous but short; abdomen with two series of tomentose areas at each side. Length (♀) 13.8 mm.; width 8.0 mm. Mexico. [*Cetonia leucographa* G. & P.]

***leucographa** G. & P.

Body narrower in form and not quite so large, similar in the scattered spots of yellowish tomentum but with rather longer, closer and more conspicuous pubescence and uniformly pale brownish-testaceous in color throughout; head with the sculpture rather less coarse, the pubescence denser; clypeus shorter than wide, with feebly (♂) or distinctly (♀) converging sides, the apex rather strongly reflexed and distinctly sinuate, or barely at all reflexed and feebly sinuate, respectively, never so strongly reflexed or bilobate as in *leucographa;* prothorax nearly similar in form and lateral tomentum and also with the base punctureless, but with the punctures toward the sides rather

shallower and denser and more disposed to oblique linear coalescence; scutellum differing in having the punctures much finer and confined to a more or less definite line parallel to the sides throughout the length; elytra sculptured as in the two preceding and with similar spots of tomentum and longitudinal incised lines near the suture; pygidium with rather finer and still less approximate, irregular incised lines, feebly umbonate near apical third (♂), or very feebly and uniformly convex (♀), the lateral spots of tomentum very fragmentary in both sexes; abdominal series composed of much smaller spots of tomentum, which are sometimes wanting. Length (4 ♂, 5 ♀) 11.8–13.0 mm.; width 7.0–7.5 mm. Mexico (Rio Balsas, Guerrero and Cuernavaca, Morelos),—Wickham. [*Cetonia rufina* G. & P.]..... ***rufina** G. & P.

10—Form (♀) oblong-oval, moderately convex, polished green above, the elytra opaque and more obscure green, sometimes with reddish clouding, and having numerous small white tomentose spots, widely and very irregularly distributed, one near the middle of the flanks rather obliquely linear; under surface polished vitreous-green, the sterna with sparse moderate hairs; head with the front strongly, closely punctate, rather elevated along the median line, the clypeus less strongly, sparsely punctate, with strongly reflexed sides and apex; prothorax a third wider than long, the sides rounded at the middle; punctures small but strong, sparse, coarse and bearing very minute hairs toward the sides; scutellum sharply triangular, punctureless, opaque, with polished basal part; elytra glabrous, oblong, barely narrowed posteriorly, the costæ very feeble, the surface almost punctureless but with some coarse incised wavy lines apically; sutural convexity becoming sharply cariniform apically, the sutural angles however obtuse; pygidium with very confused close incised lines and sparse short hairs, obtusely tumescent very near the apex in the female; legs stout, the hind tarsi short, thick and compressed. Length (♀) 19.2 mm.; width 10.4 mm. Mexico. [*Cetonia lesueuri* (and *latreillei*?) G. & P. and *notulata* Chev.]..... ***lesueuri** G. & P.

Form (♀) oblong-oval, evenly and moderately convex, dull coppery-brown, the head shining black, the pronotum gradually feebly shining toward the sides; elytra opaque, black, with many small pale brownish-red maculæ throughout, wholly devoid of tomentose spots, the pygidium densely wavy-rugose, the rugæ shining metallic-black, having sparse pale hairs and a large white spot of tomentum near each side, the surface feebly convex; under surface and legs shining, the sterna and legs with feeble reddish, the abdomen with greenish-black, lustre, without trace of tomentose spots; head rather strongly, closely punctate, the clypeus with widely spaced transverse wavy rugæ, the frontal hairs sparse, extremely short and thick, the clypeal apex as in *lesueuri;* occiput smooth, strongly convex, with no tubercle anywhere visible; prothorax a third wider than long, the converging sides broadly, subevenly arcuate, the bead very coarse and convex; punctures sparse, rather strong, becoming large and close but arcuate toward the sides; scutellum pointed, smooth and opaque; elytra oblong, not evidently narrowed posteriorly, the apex very

broad, each with two strong convex costæ and a feebler and narrower one externally, the sutural costa becoming sharply cariniform posteriorly, the carinæ forming each a thin, vertically lamellate small tooth at apex; punctures shallow and arcuate but distinct throughout, forming two series intercostally, with a few others scattered between these series; on the flanks the punctures are sparse and less arcuate; at apex there are many wavy incised lines; sterna with rather close-set coarse transverse wavy incised lines; two lower teeth of the anterior tibiæ large, united at base, the upper tooth smaller and much more distant; hind tarsi almost as thick and short as in *lesueuri*. Length (♀) 16.5 mm.; width 9.5 mm. Chiriqui.

***comminuta** n. sp.

Lesueuri is said by Mr. Bates to be the female of *latreillei;* I have no means of confirming this interesting statement, which would constitute of *lesueuri* a very marked exception in the genus. *Comminuta* is evidently related to *westermanni* G. & P., but, according to the description of Burmeister, it differs in having distinctly and arcuately punctate elytra, and there is no appearance anywhere of a "duvet jaunâtre très-serré" at any part of the body, as stated by Gory and Percheron in their description of *westermanni*. I am unable to understand what Dr. Horn could have had in hand when he measured 20 mm. as the length of a specimen of *fulgida* (Pr. Am. Phil. Soc., 1880, p. 405); the measure is probably in gross error; that author also confused two distinct southern species with *fulgida*, which were subsequently described by Fall.

To this group apparently belongs, also, the species described by LeConte under the name *californica* (New Species, 1863, p. 80), but some doubt attaches to the habitat of the unique type; it is certainly not Californian, though possibly Lower Californian, and, as the description agrees in almost every detail with that of *Erirhipis subguttata* Burm., I am of the opinion that it is Mexican and a synonym of *subguttata*. But the locality of the type of *subguttata* seems also to be somewhat doubtful, as it is founded on a specimen purchased by Burmeister in London, and the species was not included among the material described or catalogued in the Biologia, Mr. Bates simply recording it on the authority of Burmeister. Dr. Horn suspected that it might be East Indian, and the name does not occur in the Henshaw list. I am not aware of any more recent allusion to the species and further consideration of it at the present time seems unnecessary. It somewhat resembles *fulgida* and is bright green, opaque above, shining beneath, the sides and

two small spots on the pronotum, several small elytral spots and two maculæ on the pygidium, cretaceous; the clypeus is rather deeply sinuate and somewhat narrowed at apex, probably as in *lesueuri*.

Group II.

Subgenus **Erirhipidia** nov.

In general habitus the few species of this subgenus differ greatly, not only from the preceding group, but from any other of the genus; they are more abbreviated and subquadrate in outline and have a peculiar system of coloration and vestiture. We have, so far as discovered, two species and one subspecies as follows:

Form short and stout, oblong-oval, the hind body parallel to very feebly cuneiform, broadly and obtusely rounded at apex; upper surface opaque, pale tawny-yellow, the pronotum irregularly variegated to wholly black, excepting two small approximate pale spots at the scutellum, closely clothed with stiff yellowish hairs of variable length, wanting at base medially and along an entire median line, which is tumid; scutellum pale, with the median line basally and apically black, to wholly dark excepting two subbasal pale spots, the elytra mottled with small irregularly distributed dark spots, sometimes in part sublinearly arranged along the feeble convex costæ; pygidium with the pubescence rather long and coarse but very irregularly distributed, the sculpture fine and dense, more opaque in the subglabrous areas; under surface blackish, shining, the abdominal segments rufescent at apex, the pubescence of the sterna, abdominal sides and femora long, dense, yellowish and conspicuous, the internal fringe of the tibiæ very long but regular and in a single series; head rather shining, black, densely punctate and pubescent, the more finely punctate clypeus with a central nodal point, from which the hairs radiate, the reflexed apex broadly rounded, the median sinus very small and obsolescent; prothorax a third wider than long, the sides subangulate medially, becoming subparallel basally, the punctures fine, irregularly distributed, dense laterally and apically, elsewhere irregularly sparser; scutellum with a few punctures laterally toward base; elytra generally impunctate, excepting some irregular incised lines at apex, but sometimes with indefinite rows of small discal punctures; hind tarsi rather short but not thick; teeth of the anterior tibiæ acute but moderate, only a little higher than wide and not at all curved, almost similar in the sexes. Length (♂ ♀) 10.8–15.3 mm.; width 6.3–9.0 mm. New York to Florida and westward to Nebraska. Very common. [*Scarabæus indus* Linn., *Cetonia marylandica* Froh., *barbata* Say and *brunnea* G. & P.].

inda Linn.

A—Similar to *inda* but still stouter and more parallel, the opaque upper surface entirely black, excepting a few small pallid spots on

the elytra, along the suture and costæ, and three or four irregular and transverse projecting inwardly from the lateral margins; elytra with rather more numerous irregular scratches at apex; tibiæ similar; elevated smooth line along the vertex rather more obtuse. Length (♂) 13.7 mm.; width 8.4 mm. Canada (Toronto),—R. J. Crew.....**nigripennis** Klages

Form more elongate and of rather larger size, generally of a deeper brownish-rufous above, almost similarly maculate with black, excepting that the pronotum is usually wholly black, rarely with a small pale area medially at base and one near each side and at apex, the vestiture and sculpture nearly similar; scutellum black, with two long approximate reddish streaks from the base to beyond the middle; elytra nearly similar but more elongate and with the sutural angles finely spiniform, not obtuse as they are in *inda;* under surface nearly similar, except that the broad convex mesosternal knob is still more tumid; hind tibiæ more coarsely and deeply punctate; anterior tibiæ with the teeth differing very markedly, being long, slender, spiniform and arcuate in both sexes, only a little smaller in the male but of the same general character as in the female. Length (♂♀) 12.2–17.3 mm.; width 6.5–9.5 mm. New Mexico (Fort Wingate), Arizona, Colorado (Boulder Co.) and Washington State. Twenty-one examples.....**rufobrunnea** n. sp.

The following species, which I have not seen, is appended somewhat doubtfully to this group:

Body much less stout and more depressed than in *inda* and with less distinct pubescence, the peculiar transverse mesosternal protuberance similar. Body black, shining beneath, opaque above, the elytra variegated with short transverse and sinuous luteous spots, sometimes very few in number; clypeus coarsely, moderately densely punctate, subquadrate, with rounded angles and slightly reflexed truncate apex; vertex pilose and subcarinate; prothorax nearly as long as wide, the sides feebly arcuate, the base emarginate at the middle; surface coarsely punctate, more densely laterad and very sparsely near the base, the pubescence short and sparse, piceous in color, with a short median basal line and a partial vitta at each side of the middle pallid; elytra with the costæ rather vague, the intervals biseriately and feebly punctate, irregularly punctured at the sides and with irregular incised lines at apex; pygidium indistinctly concentrically strigose; metasternum smooth medially, coarsely strigose and sparsely pubescent toward the sides; abdomen very sparsely punctate and with short pubescence; femora brownish, the tibiæ and tarsi piceous, the anterior tibiæ bidentate (♂) or tridentate (♀), the teeth short; antennal club of the male nearly twice as long as in the female. Length 11.2–13.7 mm. Texas (Eagle Pass).

schotti Lec.

The species named *rufobrunnea* above is common in all our collections but has heretofore been confounded with *inda*, as an

extreme geographic variant, but a cursory examination of the anterior tibiæ will show a remarkable difference in the dentition, which, taken in connection with the more elongate form of body and certain other differences, such as the maculation of the scutellum, can leave no doubt of its specific nature. The elytra in *rufobrunnea* always have series of distinct punctures, but those of *inda* may or may not have the punctures, the difference between the distinctly punctate and wholly impunctate condition often being very striking; this is a mode of variation sometimes observable in *Cotinis*.

Group III.

Subgenus **Haplophoria** nov.

This group differs from any other in which the antennal club is decidedly different in the sexes, in having the two discal costæ of each elytron very strongly elevated, conspicuous and unusually approximate, except in *æstuosa*, which is also aberrant otherwise. The base of the pronotum medially is also more evenly rounded than in any other, for in the two groups succeeding this there is usually a feeble though rather indefinitely limited sinus, as there is occasionally in the present group. The anterior tibiæ are nearly similar in the sexes, as a general rule, the two lower teeth long, subspiniform and much more widely separated than the two upper teeth, the uppermost always small and feebly developed. The species may be defined as follows:

Elytra with the costæ conspicuously strong and elevated.....2
Elytra with the costæ feeble.....10
2—Under surface black, the abdomen and legs wholly testaceous.....3
Under surface and legs black throughout.....5
3—Last joint of the maxillary palpi long and slender, longer than the first antennal joint; hind tarsi stout, as long as the tibiæ in the male. Body oblong-subrhombiform, slightly convex, rather shining above and beneath; elytra with short sparse hairs; color pale reddish-yellow, the sutural region, spots on the first costa and a spot on the humeral and subapical umbo, black; head black, strongly punctate, densely so and pubescent on the front, the clypeal margins pale, the apical margin narrowly reflexed and with a gradually cusp-like sinus at the middle; prothorax fully a third wider than long, the sides straight and feebly converging to slightly beyond the middle, then more convergent to the apex; disk black, with an offset at the sides, and divided by a pale vitta which is subinterrupted near the apex; base and sides pale; punctures rather coarse, deep and close-set,

wanting along a narrow subtumid polished median line, the hairs coarse, rather abundant but not very long; scutellum wholly black, unusually slender, rapidly very broadly expanded at base, having incised arcuate lines along the sides; elytra with laterally very prominent humeri, the sinus deep, the sides behind parallel to the broadly rounded angles, the sutural angles obtuse; punctures close and transversely lineiform on the flanks; there are two fine double incised lines in the two intercostal valleys, these pairs of double lines inclosing a line of fine punctures; there are also other small punctures scattered between the double sets of lines and near the suture; pygidium moderately pubescent, with the usual concentric lineiform sculpture; teeth of the anterior tibiæ unequally spaced as usual. Length (♂) 12.0 mm.; width 6.4 mm. Mexico.....***retusa** n. sp.

Last joint smaller, slender, but not longer than the first antennal joint..4

4—Three teeth of the anterior tibiæ unequally spaced as usual, the two upper the more approximate; mesosternal knob transversely oval; hind tarsi slender. Body smaller and rather more rhomboidal than in the preceding, similar in coloration and maculation, except that the sides of the medially divided pronotal black area are, antero-laterad, more deeply and obliquely penetrated by the pale border, sometimes extending through to the pale median vitta, thus isolating two anterior black spots, and that the black spots of the elytra extend along the second as well as the first ridge as a rule; head and prothorax nearly similar in form and sculpture, except that the sides of the latter are not so angulate before the middle but merely more rounded; thoracic base similarly broadly arcuate to feebly truncate medially; scutellum of the usual form, differing from that of *retusa* in being shorter, less slender posteriorly and less rapidly or markedly expanding basally, covered with scratch-like punctures, except along the middle, black in color, with a large pale spot posteriorly which is wholly wanting in *retusa;* elytra in form and sculpture nearly similar, rapidly expanded at base because of the laterally very prominent rounded humeri; pygidium similarly pubescent but with the oblique incised interlacing scratches much less close-set. Length (2 ♂, 4 ♀) 8.4–11.0 mm.; width 5.0–6.0 mm. Texas, Kansas, Colorado and New Mexico.....**clarki** Lec.

Three teeth of the anterior tibiæ subequally spaced as a unique exception in the group, the uppermost nearly half as high and wide as the second; mesosternal knob more elongate, barely wider than long; hind tarsi not so slender. Body larger and still more rhomboidal, colored, sculptured and maculate as in *clarki*, the oblique pale tint from the lateral pronotal border isolating two anterior pronotal black spots in the type; head black, pallescent at the margins of the clypeus, strongly, very densely punctate throughout; prothorax sculptured as in *clarki*, the sides arcuate, becoming subparallel in basal half, the basal margin truncate and rectilinear at the middle, scutellum in form and sculpture nearly similar but pale throughout, except finely at the edges; elytra relatively broader at the humeri, otherwise nearly similar in form and sculpture, less maculate with black, the suture in the type finely infumate, and with a transverse

macula behind apical third, thence more broadly black to the tip; there are also a few other scattered discal spots in posterior third and a larger one on the subapical umbo, the humeral umbo not black; pygidium nearly similar; middle femora similarly blackish. Length (♀) 12.3 mm.; width 7.0 mm. Kansas (Wallace),—Knaus. **wichitana** n. sp.

5—Elytra pale, maculate with black, always having the flanks largely pale; pronotal black discal area solid.....6

Elytra black throughout.....7

Elytra black, the costæ having small and widely separated nubilous pale spots; body more elongate.....8

6—Anterior part of the black pronotal spot always abruptly narrowed and with parallel sides. Body smaller and narrower than in *kerni*, the elytra with much less black maculation; vestiture above short, sparse and inconspicuous as usual; head black, shining, deeply and densely punctate, the pubescence of the vertex coarse, yellowish; sides of the clypeus not elevated, the broad apex feebly sinuate at the middle, the angles, as usual, broadly rounded; prothorax rather short, two-fifths wider than long, the sides and broadly rounded basal angles as in the preceding; punctures close and strong, coarse laterally, less coarse medially, the median line and a small callus at each side of the centre subimpunctate; base feebly, subevenly arcuate, narrowly, the sides broadly and with small black spot near the median black area, pale; scutellum slender, pointed, expanded at base, sculptured as usual, black, with a small pale spot behind the middle; elytra of the usual form and sculpture, the suture, narrowly expanded behind the scutellum into a large transverse spot extending along the latter and a part of the base, black, the ridges also with small black spots and some others are scattered laterally in apical half, the humeral callus black; pygidium castaneous, with coarse wavy incised lines, sparse in the female. Length (1 ♂, 3 ♀) 9.7–10.8 mm.; width 5.7–6.0 mm. Texas and Arizona..**connivens** n. sp.

Anterior part of the solid black pronotal area always oblique, the black spot at the sides very seldom isolated. Body somewhat variable in size, moderately stout, slightly rhomboidal, feebly convex, moderately shining, the elytra straw-yellow, with black spots and larger areas, the surface with much more black than pallid coloration, in which it differs from any of the foregoing species, in fact in the blacker parts there are only small pale spots widely spaced along the discal and sutural ridges, the humeral and subapical umbones and two post-median submarginal spots are also black; head nearly as in the preceding; prothorax subsimilar but notably less abbreviated, generally a third wider than long, the punctures strong and close-set to dense, with the median line and discal callous spots similar, the erect hairs coarse, not very long; base feebly and evenly arcuate, sometimes slightly truncate medially; scutellum barely longer than the width of its expanded base, black, sometimes with an oval pale spot subposteriorly; elytra as usual, expanded at the humeri, parallel and arcuate behind the deep sinus, the apical angles broadly rounded from posterior third to the suture; sculpture as usual;

pygidium with the wavy incised lines well separated; hind tarsi slender in both sexes. Length (5 ♂, 15 ♀) 9.7–11.8 mm.; width 5.5–6.8 mm. Texas, New Mexico and Colorado (Poudre River). Female much more abundant than the male.....**kerni** Hald.

7—Body small in size, shining and deep black throughout, the antennæ pale red-brown; pubescence above scanty and short, long, dense and coarse beneath on the sterna; three teeth of the anterior tibiæ distinct in both sexes, though the upper is small and still rather less developed in the male, nearer the second than the latter is from the apical as usual; base of the pronotum at the scutellum evenly, feebly arcuate, to just visibly but always very gradually, subtruncate; head strongly, closely punctate; prothorax in form and in the deep close punctures as in the preceding species; scutellum acute, triangular, not abruptly expanded at base, irregularly linearly sculptured, except along the middle; elytra of the same form and sculpture as in most of the preceding species; in one example there is a small red spot at the outer side of the humeral callus, the latter projecting laterally as usual; apical margins rounding anteriorly to the suture more or less evidently, the sutural angles not or very minutely and feebly denticulate; pygidium frequently rufescent, sparsely pubescent, the irregular incised lines well separated, the surface more convex in the male but not definitely umbonate; hind tarsi (♂) longer than the tibiæ, much shorter (♀). Length (2 ♂, 7 ♀) 9.6–11.0 mm.; width 5.2–6.4 mm. Texas, Kansas and Colorado.....**texana** Schauf.

8—Form much more elongate than in any of the preceding species, larger than *texana*, shining, black above and beneath, except that the pronotum medio-basally becomes opaque and the elytra are opaque throughout, excepting the small sparse lineiform punctures, which are shining; legs rufo-piceous; hairs above sparse, very short and inconspicuous, beneath longer and coarse but not very dense on the sterna; head and clypeus strongly, deeply and densely punctate, the clypeus parallel and arcuate at the sides, formed throughout exactly as in the preceding species and with the cusp-like sinus of the apex similar, but it is much more elongate, being slightly longer than wide; prothorax barely wider than long, the sides feebly arcuate, becoming subparallel in rather more than basal half, the basal angles broadly rounded; base broadly lobate medially, with a very feeble sinus at the scutellum; punctures strong, deep and close-set, becoming gradually small and sparse medio-basally, the median line not definitely less punctate and unmodified, except at apex, where it becomes tumid, the apical sinus even; scutellum gradually pointed, smooth, excepting two or three small punctures at the sides and opaque, except at the sides basally, not rapidly expanded basally; elytra fully two-fifths longer than wide, formed otherwise exactly as in *texana*, the two ridges on each strongly convex and approximate; punctures laterally transversely lineiform but rather short and sparse, feeble and oblique in two lines between the costæ, with some other more angulate lines inclosing minute shining spaces; sutural angles obtuse and rounded; pygidium shining, piceous, with short sparse hairs, the wavy oblique incised lines well separated; anterior tibiæ

of the female with three blunt teeth, the two lower closer than the two upper; antennal club slightly shorter than the entire stem. Length (♀) 12.0 mm.; width 6.7 mm. Honduras (San Pedro Sula). ***longula** n. sp.

10—Form moderately stout, piceous, moderately shining; surface above and beneath with short inconspicuous pubescence, the upper surface luteous, the pronotum with a large median piceous space, the humeral and subapical umbones of the elytra tipped with piceous, the suture and apical margin narrowly piceous, the scutellum black and smooth; head coarsely and densely punctured and with moderately long hair, the clypeus slightly wider than long, somewhat broader in front, the angles rounded, the apex moderately reflexed and slightly emarginate at the middle; antennal club (♀) subequal in length to the stem; prothorax oval, narrowed in front, slightly wider than long, the sides moderately arcuate; base not narrower than the middle, the basal margin regularly arcuate; surface coarsely and densely punctured and with short erect yellowish hairs; elytra moderately convex, very vaguely bicostate, irregularly and sparsely punctate; under surface piceous, shining, sparsely hairy, the tibiæ very feebly fimbriate, the anterior acutely tridentate, the teeth rather long and equidistant; pygidium concentrically strigose, smooth near the tip; mesosternal button round, hairy. Length (♀) 13.5 mm. Kansas. A single example..... **æstuosa** Horn

This group appears to be fairly homogeneous as above constituted, although *longula* and *æstuosa* possess some aberrant characters relating to the form of the scutellum, sculpture of the elytra and development of the elytral costæ, which seem to be much feebler in *æstuosa* than in any of the others; the latter species is unknown to me and the above description is drawn directly from that of Dr. Horn (Pr. Am. Phil. Soc., 1880, p. 400). The species of the *kerni* section, though having a marked community of habitus, are distinguished by many structural characters of importance, irrespective of coloration, and they have been too hastily united under the name *kerni*. It should also be said, in this connection, that color, when radical and constant, as it is among these forms, is as important a structural character as any modification of special organs.

Group IV.

Subgenus **Euphorhipis** nov.

In this group the body is small or very moderate in size, not rhombiform and without such laterally prominent elytral humeri as in the preceding group; the elytral costæ, also, are generally very much feebler, resembling more nearly the *biguttata* group in

this respect, but they are stronger in *subtomentosa*. The clypeus is somewhat as in the *kerni* group but lacks the cusp-like sinus of the apex, the apical margin being in fact almost perfectly even and devoid of any kind of sinus; it also differs in having the teeth of the anterior tibiæ more approximate among themselves and in having spots or uneven lines of tomentum on the elytra, these being much more conspicuously developed than in the *fulgida* group. The hind tarsi are rather short but not thick and pubescence above, beneath and on the legs, is much more developed than in any of the preceding groups. The base of the pronotum has a very shallow and generally not very sharply defined sinus at the scutellum. The typical form is not now at hand, the only two species in my collection being the following:

Body elongate-oval, rather convex, shining, piceous-black and with rather long coarse yellowish pubescence above, close on the pronotum, sparse on the elytra; under surface and legs shining, black, the abdomen picescent, the sterna, sides of the abdomen and legs with long coarse conspicuous hairs; front densely, the clypeus more feebly and rugulosely punctate, the former conspicuously pubescent; clypeus abruptly though moderately reflexed and broadly rounded at apex, the sides not elevated; prothorax a fourth wider than long, trapezoidal, the sides a little more arcuate just before the middle; punctures strong, deep, close-set and very even throughout, the median line not modified in any way; scutellum with numerous moderate punctures bearing coarse hairs, smooth along the middle; elytra a third longer than wide, not distinctly narrowed posteriorly, the punctures numerous but not dense, shallow, elliptic-annular, open behind, becoming not closer but rather more transversely lineiform laterally, confused throughout between the costæ and on the broad sutural interval, the costæ low, shining and impunctate; tomentose areas numerous, still more so laterally and solid at apex, generally very irregular in shape though more or less lineiform; pygidium convex, subumbonate, almost wholly tomentose, except along the apex, the incised irregular lines well separated. Length (♂) 10.5 mm.; width 6.4 mm. Arizona (Huachuca Mts.). [*Euphoria sonoræ* Bates] ..... **histrionica** Thoms.

Form more elongate and less oval, shining, except in the tomentose areas of the elytra, which are very different from those of *histrionica*, being less comminuted, more rounded, numerous on the flanks, solid at apex and tending also to form a transverse series across the elytra at about the middle; color black, the elytra castaneous, the abdomen more or less rufescent; pubescence not quite so long as in the preceding but similar otherwise; head nearly similar but with the clypeal apex not evidently reflexed; prothorax also similar but rather shorter, the punctures not quite so close-set; basal sinus very shallow and not

sharply defined; scutellum rather smaller, similarly acutely triangular but having far fewer punctures, these principally aggregated in a cluster at each side basally, the hairs borne by the punctures finer; elytra with the ridges even feebler, smooth, the punctures of the intervals confused, smaller and sparser than in *histrionica* and narrowly elliptic-annular, open behind as usual, toward the sides coarser and deeper and in the form of short transverse crescents; pygidium (♀) with very even and barely at all convex surface, covered throughout with dense yellowish tomentum, except the extreme ends, the incised lines of the tomentum sparse, bilaterally oblique in general direction, the erect hairs rather long but fine. Length (♀) 10.8–11.0 mm.; width 5.8–6.0 mm. Arizona (southern), —Levette.....**scabiosa** n. sp.

The antennal club in this group differs sexually far less in length than in any of the preceding groups and is rather small in both sexes, but *subtomentosa*, which I have not seen, was placed in *Erirhipis* by Burmeister. However, the validity of the group as a subgenus depends more upon the disposition of the anterior tibial teeth, non-sinuate clypeus, feeble basal sinus of the pronotum, tomentose elytra and some other characters, in the aggregate constituting an isolated habitus, than it does upon any single organic modification. It is probable that the species described above under the name *histrionica* is the slight varietal form called *sonoræ* by Bates; I judge so, at least, by the numerous scutellar punctures and the geographic habitat. *Scabiosa* cannot be considered closely allied, as it is very much narrower and more elongate even in the female.

Group V.

Subgenus **Rhipiphoria** nov.

The general scheme of ornamentation is one of the more useful discriminating features of this group, the pronotum being vittate and the elytra with sharply defined solid black vittæ in the typical species, and with the comminuted spots in certain other types, such as *arizonica*, tending strongly to linear arrangement. The antennal club differs as much sexually here as in any other group of the Erirhipid series, being very much longer in the male than in the female. The upper tooth of the anterior tibiæ becomes very feeble here, even in the female, and is generally wholly obsolete in the male. The clypeus is broad, with the edges much thickened, the apex feebly reflexed and usually with a distinct rounded sinus medially—deep in *geminata*. The species at hand are as follows:

Elytra with solid black vittæ. Body elongate-rhomboidal, stouter and with nearly parallel hind body in the female, deep black, opaque above, shining beneath, the head shining, unevenly, moderately closely punctate, the clypeus rufescent at base, strongly (♂) or moderately (♀) reflexed at apex; pronotum having the sides and a medial vitta pale yellowish, the sides rather angulate beyond the middle, thence but feebly diverging to the base, the sinus of the latter extremely shallow and indefinitely limited; punctures minute and remote, becoming barely more distinct laterally, where there are a few very small hairs; scutellum smooth, opaque, with a median pale vitta; elytra elongate, with the costæ obsolescent, very feebly convex; punctures very fine and sparse, in part linear; each elytron has three entire pale vittæ, the middle one terminating at the junction of the bounding black vittæ posteriorly and sometimes partially interrupted in the male; pygidium with the incised lines rather fine and sparse, the surface longitudinally tumid medially, especially in the male, having very short pale hairs and a large discal tomentose spot at each side; under surface with large areas of tomentum toward the sides, much reduced in the female; sterna with very moderate pubescence. Length (♂ ♀) 11.0–13.0 mm.; width 5.9–7.3 mm. Mexico (Chiapas) to Panama. [*Cetonia geminata* Chev., and *cheniaci* Lap.]

***geminata** Chev.

Elytra with comminuted dark spots. Body slender, elongate-rhomboidal, moderately convex, opaque, pale yellowish-brown above, piceous and shining beneath, the legs dark rufous; pubescence of the head and pronotum, especially toward the sides, distinct, moderately long and coarse, of the elytra sparse, short and coarse, of the sterna and sides of the abdomen long, coarse, dense and conspicuous; head shining, rather strongly and closely punctate, the clypeus reflexed at apex, the sinus shallow but distinct; prothorax small, only a little wider than long, the sides subparallel or but feebly, anteriorly converging in basal three-fifths; base broadly arcuate, with barely a trace of an undefined sinuosity at the middle; punctures fine and very sparse throughout; surface with two broad black vittæ, not attaining the base, and a small black spot near each side; apical margin very vaguely tumid at the middle; scutellum sharply pointed, smooth, tawny-yellow throughout; elytra distinctly cuneiform, much wider than the prothorax, elongate, very finely, sparsely, indistinctly and in part linearly punctate, the costæ broad and extremely indefinite, very faintly convex as in *geminata*, the small dark spots very irregular in form, aggregated along the suture and each costa, elsewhere wanting; pygidium convex, loosely vermiculato-lineate, distinctly and coarsely pubescent, neither it nor any part of the under surface tomentose; anterior tibiæ (♂) slender, the upper tooth very obtuse and vestigial, the two lower very feeble and obtuse; hind tarsi rather stout and as long as the tibiæ. Length (♂) 11.3–11.9 mm.; width 5.5–6.2 mm. Arizona (Santa Rita and Baboquivari Mts.).

arizonica Schf.

Arizonica is allied closely to the Mexican *vestita* G. & P., *avita*

Jans., and *fulveola* Bates, which therefore also form part of this group; perhaps *schotti* Lec., may also belong here rather than to the *inda* group, but of this I can say nothing further at present. In looking over the published figures on the Biologia plate, it seems evident that *mystica* Thoms., and *iridescens* Schaum, may form a subgeneric group different from any here proposed and *candezei* Jans., is in all probability generically different from *Euphoria*, because of elytral structure and striation.

Group VI.

Subgenus **Euphoria** in sp.

In this group the antennal club is rather small in both sexes and never more than very slightly longer in the male than in the female. The body is feebly rhombiform, never opaque above, the elytra with sparse tomentose spots and lines in all except *basalis* and *fascifera*, which species are also aberrant in other respects, as well as in type of elytral coloration. The two costæ of the elytra are nearly always distinctly elevated, and the anterior tibiæ are tridentate in both sexes, the two lower teeth usually, but not always, more approximate than the two upper. Individuals of most of the species are very abundant, and it seems therefore the most appropriate group to typify the genus *Euphoria* in its more special sense; the species are, however, more difficult to define and more varietally diversified than in any other group of the genus; those at hand are the following:

Elytra uniform in color, generally having small tomentose spots; scutellar sinus of the pronotum deep.....2

Elytra yellow or orange, trifasciate with black, without tomentose spots on any part of the body.....9

2—Pronotum almost punctureless, except anteriorly and broadly toward the sides.....3

Pronotum generally uniformly punctured, excepting a more or less narrow and generally more or less embossed punctureless median line, the hairs numerous but short, coarse; elytra with sparse short stiff setæ.4

3—Pronotum with an oblique broken vitta at each side, not attaining base or apex, and also the lateral limb, tomentose. Body oblong-oval (♀), narrower and slightly rhomboidal (♂), shining, rufo-piceous; head with rather close and moderate punctures, the vertex pilose, the clypeus with a very feeble median sinus at apex; prothorax with the punctures laterally large but shallow and obliquely crescentic, the median parts with a few larger and small punctures remotely

scattered; scutellum virtually punctureless, very smooth; elytra with numerous tomentose spots, of which the apical is annuliform, the others transversely sinuous as a rule; costæ obtusely elevated and smooth, the intervals with close-set open annuli and some short broken incised longitudinal lines; flanks with dense, transversely interlacing incised lines; pygidium with concentric incised lines and having a large tomentose area at each side, the umbo (♂) strong and subcentral, feebler and more apical (♀); sterna with long coarse hair; sides of the abdomen with a row of transverse tomentose spots; mesosternal knob nude, tumid, transverse and arcuate, somewhat as in *inda*. Length (♂♀) 10.5–12.0 mm.; width 6.7–7.5 mm. Brazil. [*Cetonia lurida* Fabr., *adspersa* Web. and *fasciolata* Esch.]

***lurida** Fabr.

Pronotum without trace of discal tomentum, the lateral limb cretaceous. Body narrower, more elongate and much more rhombiform than in the preceding, blackish, with feeble greenish-metallic lustre above and violaceo-metallic lustre throughout beneath and on the legs; head strongly, almost confluently punctate, the clypeus more parallel and shorter than in *lurida*, the sides and apex feebly reflexed, the apex evenly and transversely rounded, without trace of sinus; vertex with a smooth embossed prolongation from the subbasal punctureless area; prothorax a third wider than long, the sides arcuately subprominent near the middle, thence feebly diverging to the moderately rounded basal angles; punctures laterally moderately coarse, deeply crescentic, obliquely linear near the apical angles, as in the preceding medially; scutellum with one or two adventitious punctures; elytra distinctly elongate, rather depressed above, the two discal ridges obtuse and more feeble than in any other species of this section, the suture however strongly elevated, becoming carinate toward the hind angles, which are minutely dentiform; punctures small and very sparse basally, closer but very irregularly lineiform posteriorly, with a few incised longitudinal lines only near the suture posteriorly, the flanks with transverse incised lines, very sparse basally, dense posteriorly; pygidium nearly flat, with very coarse and well separated, irregularly oblique incised lines and a large lateral horizontally divided tomentose spot near each side; pale hairs short, very coarse; mesosternal knob broad, rounded and well developed, nude. Length (♀) 13.0 mm.; width 7.7 mm. Panama (Natá).

***submetallica** n. sp.

4—Mesosternal process transverse, rounded or very obtusely subangulate at apex 5

Mesosternal process as long as wide or very nearly, sharply angulate, nude as usual 8

5—Body glabrous above or nearly so, very shining, rather sparsely punctured and blue-black or greenish-black in color 6

Body distinctly pubescent above, though briefly and sparsely on the elytra, not quite so shining because of the closer sculpture, greenish-subæneous to testaceous in color 7

6—Antennal club (♂) as long as the stem, distinctly shorter (♀). Body rather stout, the elytra but slightly narrowed posteriorly even in the

male, very shining, black, with strong deep blue, rarely greenish, lustre above, the under surface and legs shining black, the sterna with very moderate sparse pubescence; head strongly, densely punctate, the vertex with a few coarse hairs; clypeus as long as wide, subparallel, very obtuse and barely at all reflexed and feebly medially sinuate at apex; prothorax large, slightly (♂) or much (♀) shorter than wide, trapezoidal, with the sides obtusely angulate medially, the lateral bead strong; just within the bead there is a tomentose line (♂), altogether wanting (♀); punctures rather coarse, not dense, becoming notably sparse medially, those toward the sides bearing very short erect hairs as seen only by very oblique view; scutellum with some scattered submedial punctures; elytra moderately elongate, with moderate costæ, the sutural elevations cariniform posteriorly and obtusely denticulate at apex; punctures not large, very obliquely lineiform, with one or two fine longitudinal incised lines toward the suture; on the flanks they are transversely incised and well separated; tomentose spots small and sparse, one slender and transverse behind the middle usually more noticeable; pygidium (♂) with very widely spaced irregular oblique incised lines, feebly umbonate below the middle and with a small, very irregular, transversely tomentose spot at base sublaterally, or (♀) feebly convex, similarly lined but without tomentose areas; anterior tibiæ distinctly tridentate in both sexes. Length (3 ♂, 7 ♀) 11.4–13.3 mm.; width 6.1–7.8 mm. Texas. [*Euphoria melancholica* Horn nec G. & P.]..... **nitens** n. sp.

7—Body oblong, rather stout, the elytra never more than feebly cuneiform, rather shining, black, with viridi-æneous lustre, sometimes becoming rufo-piceous, the under surface polished black, with greenish to cupreous lustre; pubescence of the vertex and pronotum rather short but abundant, very coarse and conspicuous, that of the elytra rather shorter, erect and sparse but very coarse; head clearly punctured, the clypeus much more shallowly and rugulosely and with a few very short coarse hairs, subparallel, shorter than wide, concave along the sides, the broad obtuse apex very abruptly but only slightly reflexed, feebly sinuate medially; prothorax formed nearly as in *nitens* but with the punctures not so coarse and everywhere much closer, the narrow impunctate median line well defined; just within the lateral beading there is a line of tomentum, very variably developed but apparently almost equal in the sexes; scutellum with scattered and rather strong punctures, principally behind the middle; elytra rather flattened above, shorter than in *nitens*, only a little longer than wide, with the costæ rather narrow but strong and conspicuous as a rule, the punctures close-set, arcuate, generally interlacing and with some longitudinal incised lines; on the flanks the sculpture is in the form of irregularly confluent, transverse and moderately close-set incised lines; tomentose spots small but numerous throughout, generally transverse, with one subapical which is transversely arcuate to semi-annular; pygidium with deep interlacing incised lines and a subcentral umbo (♂), or more feebly tumid along the middle (♀), having in both sexes a very irregular reniform

or subcomminuted area of tomentum at each side; hairs abundant and coarse, rather variable in length; anterior tibiæ with the two lower teeth more approximate than the two upper and a little longer and more spiniform in the female. Length (♂ ♀) 11.8–14.0 mm.; width 6.4–8.0 mm. Texas and southern Louisiana, also one example from St. Louis, Missouri. Abundant. Seventeen examples. [*Cetonia sepulchralis* Fabr., and *reichi* G. & P.]. . . . **sepulchralis** Fabr.

A—Similar to *sepulchralis* in every way, except that the body is smaller and generally more piceo-rufous in color, the antennal club similarly subequal in the sexes and evidently shorter than the stem; the concave surface between the suture and subapical umbones, which is rather finely and densely reticulate in *sepulchralis*, is almost as densely so here, but the pubescence of the pronotum, which is always notably short in that species is here distinctly more developed. Length (♂ ♀) 10.0–11.3 mm.; width 5.7–6.7 mm. Taken abundantly by Mr. Knaus at Manhattan and Muncie, Kansas; it also occurs at Vowell's Mill, La. A specimen taken at Vicksburg, Miss., is very close to the typical Manhattan form and probably identical. The above measurements refer simply to the sixteen specimens from Manhattan and Muncie.

kansana n. subsp.

B—Similar to *sepulchralis* but more oval and rather less depressed above, black, with greenish lustre, feebly cupreo-æneous beneath, with rather finer and feebler elytral costules, the pronotum with rather finer and denser punctures, which are more uneven in size and with the pubescence longer, denser and much more conspicuous than in any other form allied to *sepulchralis;* reticulation between the suture and umbones dense and even as in *sepulchralis;* teeth of the anterior tibiæ equally spaced; pygidial umbo of the male obtuse and well below the centre. Length (♂) 10.2–11.8 mm.; width 5.4–6.8 mm. Southern Illinois and St. Louis, Missouri. Two examples. . . . . **crinitula** n. subsp.

C—Similar to *sepulchralis* in general outline and rather depressed above, but not quite so large and blacker, with less evidence of metallic lustre, the pronotum nearly similar but with better developed tomentose line at the sides, the pubescence similarly short but less sparse; elytra with coarser sculpture throughout and with more numerous minute tomentose spots, mingled with the transverse sinuous lines, which are similar in number and position; concavity between the suture and umbones much more coarsely reticulate. Length (♂ ♀) 10.3–12.7 mm.; width 6.0–7.2 mm. Florida (East coast, from Jacksonville to Palm Beach). Fifteen examples. . . . . **floridana** n. subsp.

D—Similar to *sepulchralis* in general character but narrower in outline, with the lustre brighter and more cupreo-æneous, the vestiture similarly short and inconspicuous and the elytral sculpture and tomentose maculation almost as in that species, but differing especially in having the prothorax not distinctly wider than long and more elongate than in any other form in this section, being but

just visibly shorter than wide, the converging sides from base to apex very broadly and feebly angulate at the middle; concentric incised lines of the pygidium uneven but throughout much more widely separated than in *sepulchralis*, the umbo of the male strong and well below the centre. Length (♂) 12.2 mm.; width 7.0 mm. Kansas (Medora). Probably a local race in this zoologically somewhat isolated region.....**cuprascens** n. subsp.

Body oblong-oval, much shorter than in any of the above and with finer and denser sculpture, piceous, very moderately shining, polished and submetallic beneath; pubescence short and erect, rather abundant on the pronotum, equal in length but very much sparser on the elytra; head and clypeus of nearly the same form and sculpture as in the preceding types, but the apex is transversely rounded, the sinus almost completely obsolete; antennal club distinctly shorter than the stem in both sexes; prothorax much shorter than wide, with arcuate converging sides, the punctures strong and close-set, the median line impunctate, sometimes slightly tumid; lateral tomentose stripe generally comminuted; scutellum with scattered punctures except basally; elytra barely longer than wide (♂), evidently so (♀), the costæ distinct, smooth, the intervals with dense interlacing arcuate umbilicate sculpture, the posterior concavity very densely reticulate; flanks with the incised transverse lines deep, much broken up and very dense; tomentose spots and lines nearly as in *sepulchralis;* pygidium with very dense and confused incised sculpture, with more or less comminuted tomentum basally as a rule, the pubescence short, though notably long in one male from Asheville; male umbo nearly at the centre; anterior tibial teeth nearly similar in the sexes and equidistant or virtually so. Length (6 ♂) 9.6–11.0, (1 ♀) 12.2 mm.; width (♂) 5.8–6.8, (♀) 7.0 mm. Maryland to northern Alabama. Not abundant.....**appalachia** n. sp.

Body narrower and more rhomboidal, the smallest of this section, pale piceo-rufous in color, not evidently metallic, moderately shining, polished beneath, the legs paler and subcupreous; pubescence as in the preceding; head nearly similar but with still more broadly rounded clypeal angles and rather more evident, though vestigial, sinus; antennal club small in both sexes; prothorax of the same general form but less abbreviated, coarsely and densely punctate, excepting the usual median line, which however is generally puncture-less and also sometimes tumescent only behind the middle; sides seldom even with disintegrated tomentum; scutellum generally more punctured parallel with the sides except basally; elytra narrower, distinctly elongate, the sculpture strong and close but less dense than in *appalachia* and with more evident longitudinal incised lines suturally, the tomentose spots and lines fine; pygidium with coarse and deep, very irregular but less dense incised lines, with comminuted tomentum basally or not, the male umbo below the centre; anterior tibial teeth large, triangular, subsimilar in the sexes and subequidistant. Length (♂♀) 8.8–11.0 mm.; width 4.9–6.2 mm. North Carolina to Florida. Very abundant. Twenty-six examples.

scolopacea n. sp.

8—Form slightly rhomboidal, somewhat depressed above, shining, brownish-testaceous in color, the anterior parts more piceous; under surface and legs blackish, the abdomen subviolaceous, the femora subcupreous; pubescence above nearly as in *scolopacea*, that of the sterna rather long, abundant and conspicuous; head densely punctate and pubescent, the clypeus nude and with the punctures notably sparse, the apex abruptly slightly reflexed, evenly and obtusely rounded, without trace of sinus; antennal club small; prothorax nearly a third wider than long, trapezoidal, the sides a little more arcuate medially; punctures rather large, moderately close, shallow and crescentic, the median impunctate line entire; pubescence abundant, coarse, yellowish and not very short; margin within the bead with disconnected small spots of tomentum; scutellum with scattered punctures toward the sides throughout the length, not very finely acuminate; elytra with smooth elevated costæ, the sculpture of the intervals consisting of peculiarly comminuted confused interlacing incised lines, very even but becoming sparser and more like punctures basally, the flanks with deep interlacing transverse close-set grooves; tomentose spots and lines fine, somewhat as in *sepulchralis*, with a row of small spots along the apical margin; pygidium moderately convex, the incised lines irregular, fine, not dense and becoming still finer and feebler toward the sides, the hairs short and sparse; anterior tibial teeth strong and triangular, the lower two rather the more approximate. Length (♀) 10.3 mm.; width 6.0 mm. Indiana. A single example. . . . . **oxysternum** n. sp.

9—Form oblong, the elytra parallel, shining, black and wholly unmetallic above and beneath, the elytra yellow, with the base, a transverse rhomboidal medial fascia, often broadly joining the basal fascia suturally, and a transverse spot crossing the suture near the apex and also often broadly united with the median fascia, black; externally, at apical fourth, there is a small black spot though often obsolete; pubescence cinereous, barely visibly straw-yellow, rather variable on the pronotum, from very short to very long and shaggy, more constant on the elytra, sparse but rather long and coarse, wanting on the strongly elevated costæ, long, very dense and conspicuous on the pygidium, except in an apical strigose area which is completely glabrous, long and coarse but not very dense on the sterna and sides of the abdomen; clypeus obtuse, not much reflexed but distinctly sinuate medially at apex; prothorax unusually small, much narrower than the elytra, the sides subparallel, oblique anteriorly, rather strongly, densely punctate, a slightly tumid median line joining a large medio-basal area and two irregular discal areas at each side, smooth and punctureless; scutellum formed as usual, smooth and punctureless; elytra a fourth to fully two-fifths longer than wide, the depressions with rather close elongate incised annuli, open behind, and also with some longitudinal incised lines; flanks with smaller, transversely crescentic punctures, not closely placed and with a smoother line near the sides; anterior tibiæ sharply tridentate in both sexes, the two lower teeth more approximte; antennal club notably small in both sexes. Length (♂♀) 11.0–14.5

mm.; width 6.0–8.3 mm. Mexico (Durango to Federal District). Abundant. [*Cetonia basalis* G. & P.].....***basalis** G. & P.

A—Similar to *basalis* in every way but rather smaller, with the ground color of the elytra a brilliant orange, the vestiture everywhere more deeply fulvous and the subapical spot of the elytra divided by the suture, forming two spots, neither of which seems ever to quite attain the sutural carina; pygidium pale testaceous and apparently never black as it is in *basalis*. Length (♂ ♀) 11.5–12.4 mm.; width 6.7–7.6 mm. Mexico (Guerrero),—Baron.

***crinicauda** n. subsp.

Form elongate, subrhomboidal; body black; clypeal apex truncate and broadly reflexed; prothorax not shorter than wide, the sides oblique and somewhat rounded, black, shining, sparsely punctate, the basal and lateral margins flavate, the latter with a small black spot before the middle; elytra opaque, slightly narrowed from the humeri, the margin at the humeri, two broad fasciæ and the apex flavate; sterna and abdomen with pale hairs laterally. Length 16.5 mm. Lower California (Cape San Lucas). [*Euryomia fascifera* Lec.]

fascifera Lec.

A—Form elongate-rhomboidal, broader and more parallel in the female, shining throughout, polished black beneath and throughout the legs and head; prothorax pale testaceous, the basal margin very finely infuscate, less finely along the scutellum; surface with four discal spots forming a trapezium, the two anterior the smaller, also with a small black point near the sides before the middle; elytra black, with two broad irregular transverse fasciæ attaining the sides but narrowly interrupted at the suture, and a transverse apical area, also interrupted by the suture, flavate, the first fascia continued to the base outside the humeral callus, the pygidium black; upper surface glabrous, the pygidium and sterna with very short sparse hairs, the abdominal segments each with a small oblique tuft of coarser hair at each side; head coarsely, closely punctate, the clypeus subparallel, the apex broadly arcuate and strongly reflexed, the apex rather less reflexed, more rounded and with a feeble median sinus in the female; prothorax strongly trapezoidal, with subevenly arcuate sides, a third or more wider than long, the apex only two-fifths as wide as the base, subtruncate and prominent at the middle, even more so than in *Cotinis;* surface sparsely punctate, strongly laterally, very finely medially; scutellum with a few minute punctures ranged parallel to each side; elytra a third to two-fifths longer than wide, the two costæ narrow and feebler than usual, the punctures sparse, variolate, for the most part serial, confused and much deeper on the flanks, the latter with dense confused incised lines posteriorly, but only within the last black fascia; pygidium with strong separated oblique interlacing incised lines, umbonate near the apex in both sexes; upper tibial tooth feeble in the male; hind tarsi much shorter in the female. Length (♂ ♀) 14.3–16.5 mm.; width 7.4–9.3 mm. Arizona (Cochise Co.). Three examples, showing no variation.....**trapezium** n. subsp.

The species described by Gory and Percheron under the name *Cetonia melancholica* is said to be of a bronzed greenish-black color and to have two discal lines of tomentum on the pronotum, besides the marginal lines; it is not mentioned at all by Burmeister or Bates and was founded on a specimen marked "Egypt" in the collection of Dejean. There is never so much as a trace of discal pronotal lines of tomentum in *nitens*, and the marginal lines are only present in the male, so far as now determinable. I am strongly of the opinion that *melancholica* G. & P. is a synonym of the Brazilian *lurida* Fabr.

The taxonomic difficulties encountered in the *sepulchralis* section can only be compared with those of the *nitida* and *mutabilis* sections in *Cotinis*. The mesosternal prominence is transverse and generally very broadly rounded in all the various forms here defined, but in many examples of *floridana* and *scolopacea*, there is a feeble obtuse angulation, suggestive of the strong angulate point in *oxysternum*, though not at all similar. *Basalis* and *fascifera* are both remarkably isolated species and might be made the types of distinct groups of the genus with some propriety; there is a notable inconstancy in pronotal vestiture in *basalis*, which is not due to accidental breaking or removal of the hairs, and the sculpture and vestiture of the pygidium are remarkable. The male and female in this species differ so little that it is very difficult to separate the sexes; there seems, however, to be a very slight sexual difference in the length of the antennal club and hind tarsi, which will enable one with care to recognize the male in most instances. I am unable to prove that the variation in pronotal vestiture is in any way sexual in nature as it is in *Stephanucha pilipennis*. Among the thirteen specimens at hand, there are only two in which the pygidium is not deep black in color; these two are the most northern, having been taken in Durango by Wickham; in one of them it is pale testaceous throughout and in the other black, with pallescent margins. In all my four examples of *crinicauda* the pygidium is uniformly very pale testaceous. The characters given above for *fascifera* Lec., are taken from the original description (Proc. Acad. Phila., 1861, p. 336). It will be observed that the description of LeConte states that the elytra are opaque, but the entire surface is said to be shining in the subsequent description of Horn (Pr.

Am. Phil. Soc., 1880, p. 404). I am unable to confirm the language of LeConte, which may be due to a soiled elytral surface, though this would seem to be improbable. The species resembles *fulgida* in size and outline and could be placed near that species almost as well as here, though not closely allied to *fulgida* and peculiar in the tubercle of the thoracic apex; the antennal club in the male is barely as long as the stem, slightly shorter in the female.

Group VII.

Subgenus **Isorhipina** nov.

The chief peculiarity of this group is the attenuated flat clypeus, having its apex more or less strongly bilobed, but it, like the preceding group, includes strongly pubescent to nearly glabrous species, also those having strong to subobsolete elytral costæ and, though the elytra generally have tomentose spots and lines, there are some forms, such as *dimidiata* and *devulsa*, which have no trace of them, showing that none of these characters, taken alone, can be considered as of subgeneric significance. The antennal club is small and sexually subequal in all and the general scheme of ornamentation is also peculiar to the group. The anterior tibiæ are tridentate in both sexes. The rather numerous species are almost wholly Mexican and Central American and those at hand, excepting *devulsa*, the description of which is taken from the original, may be known as follows:

Upper surface with conspicuous pubescence; body narrow and elongate. 2
Upper surface glabrous or nearly so; body varying in form but always having the elytral costæ very feeble, sometimes almost obsolete. . 4

2—Elytra in great part opaque and velvety, the costæ extremely feeble, almost obsolete. Black, the head, prothorax, broad sides of the elytra and elevated suture, pygidium, under surface and legs shining; flanks of the elytra and a small area near the suture before the middle dark rufous; pubescence long and coarse, glistening, pale fulvous, close on the pronotum, sparse and bristling on the elytra, except on the costal surfaces, sparse beneath, denser at the sides; head rather finely, very closely punctate; clypeus longer than wide, parabolic, not reflexed or very narrow at apex but distinctly bilobed, hairy throughout; prothorax slightly transverse, trapezoidal, the sides subparallel in basal half, the punctures fine, dense and forming oblique series laterally, stronger and less confluent medially, the impunctate line scarcely tumid, only visible in basal half, the basal margin broadly smooth medially, more narrowly toward the sides; lateral bead thin and acute, without inner tomentum; scutellum with scat-

tered punctures basally, except at the sides; elytra slightly wider than the prothorax, much wider at the humeri, arcuately narrowed apically; punctures wanting in the opaque area, in the form of transverse incised lines on the flanks, the intervals between the costæ each with two entire fine incised longitudinal lines; sutural margins strongly elevated and polished; pygidium obtusely umbonate at apical third, rather closely, concentrically strigose; anterior tibial teeth equally spaced. Length (♂) 9.3 mm.; width 5.0 mm. Honduras. [*Cetonia thelasco* and *montesuma* (Mexico) G. & P.]

***thelasco** G. & P.

Elytra with more strongly convex costæ, which however become less apparently elevated in the opaque areas.....3

3—Body narrowly oblong-suboval, not so rhombiform as in the preceding and with relatively less prominent humeri; pubescence long and coarse, generally fulvous, conspicuous on the pronotum; head densely and finely punctured, the flat clypeus not at all margined, barely reflexed at the bilobed apex; pronotum finely, deeply, closely punctate, the punctures forming long oblique lines laterally; scutellum well developed, in large part confusedly punctate; elytra more or less elongate, the deep sulci finely punctate and with longitudinal incised lines, the flanks with the punctures small and well separated before, transversely lunate behind, the post-median transverse spot of tomentum; color wholly black and shining throughout, to nubilously red from the humeri nearly to the suture behind the middle; pygidium generally with a moderate spot of tomentum near each side; teeth of the anterior tibiæ very oblique, sharply pointed and subequidistant. Length (♂♀) 10.0–10.5 mm.; width 5.7–5.8 mm. Mexico (Almolongo, Mex., and Rio Balsas, Guerrero) and Guatemala. [*Cetonia pulchella* and *ferrugata* G. & P.].....***pulchella** G. & P.

Body still narrower and more elongate, the humeri small and not very conspicuous at the sides, black, shining, the pubescence long, coarse and fulvous as in *pulchella*, the flat and similarly densely and rather finely punctate clypeus rather more rapidly acuminate, with the apex narrowly and feebly sinuato-truncate; prothorax fully a fourth wider than long, the sides subparallel basally, oblique apically, the apex barely half as wide as the base, feebly sinuate, the basal sinus distinct; punctures small, deep, close, forming oblique lines, wanting at base and along the median line behind about the middle; scutellum as in *pulchella* but notably narrower; elytra longer, fully two-fifths longer than wide, the sulci impunctate but each having the two long incised lines distinct, shining, black, each with a large and oblique, very opaque red area, from the humerus to near the suture from basal third to behind the middle, with a black emargination opposite the end of the scutellum, this opaque area obliterating all sculpture as it does also in *thelasco;* flanks finely punctured below the opaque area and, behind the post-medial transverse tomentose spot, becoming very coarsely, deeply and rather closely, transversely incised; apical part with two subsutural and one external transverse tomentose spots; pygidium evenly convex and concentrically finely strigose, without tomentose spots and with coarse pubescence; anterior tibiæ

with rather acute but only moderately oblique equidistant teeth, the uppermost very much smaller than the others though acute. Length (♀) 10.0 mm.; width 5.6 mm. Ecuador (Babahoya)?. [*Cetonia childreni* G. & P.].....***childreni** G. & P.

4—Elytra with conspicuous spots and lines of tomentum.....5

Elytra wholly devoid of tomentose spots.....8

5—Clypeus gradually and conspicuously narrowed from base to apex, the latter relatively very narrow and rounded, slightly thickened but not reflexed.....6

Clypeus less strongly narrowed to the apex, which is broadly obtuse, barely reflexed and very feebly, though more or less evidently, bilobed.....7

6—Body small, narrowly oblong-oval, convex, shining, black, the upper surface with short and rather inconspicuous erect hairs, becoming long and rather dense on the sterna and toward the sides of the abdomen; elytra each with a large red spot from the sides basally nearly to the suture and scutellum; head with close shallow rugulosity and with short sparse hairs almost evenly throughout; prothorax convex, about a fourth wider than long, the sides almost evenly rounded, oblique anteriorly, parallel basally, with rather coarse but shallow punctures, close and obliquely confluent laterally, sparser medially, where there is an ill-defined impunctate line expanding at base; sides with a narrow line of tomentum; scutellum broad, triangular, smooth, about a fifth as long as the elytra, the latter longer than wide, with very sparse hairs and feeble, broadly tumid costæ, the inner sulcus with two double incised lines, with an intermediate row of punctures, the outer sulcus with confused and elongate-elliptic deep annuli; the flanks with sparse crescentic punctures; in about outer half and apical three-fifths there are six or seven close-set transverse tomentose lines and, at apex, a broader line; pygidium strongly, evenly tumid, with the crest below the centre, entirely covered with tomentum, except medially from the tumor to the apex, the tomentum with irregular and well separated incised concentric lines; abdominal segments each with a transverse tomentose area toward the sides, not attaining the segmental apex; two lower anterior tibial teeth large, rather more distant than the upper two, the uppermost feeble, the tarsi short. Length (♂) 9.2 mm.; width 5.0 mm. Mexico. [*Cetonia canescens* G. & P.]....***canescens** G. & P.

Body larger and much stouter than in *canescens*, but almost similar in general characters and in the tomentose areas, black or piceous-black, rather shining, the elytra very indefinitely and not strongly rufescent in about basal half, except near the suture and scutellum; pubescence much shorter, coarser, sparser and less visible than in the preceding, on the sterna and sides of the abdomen less dense than in that species and not so long but very coarse; head more opaque, finely but more definitely punctate, the clypeus not quite so sharply acuminate, the apex more rounded; prothorax much larger, fully a third wider than long, the sides feebly converging to three-fifths, then strongly oblique to the apex; punctures coarser, deeper and laterally much less close-set than in *canescens*, the median line

nearly similar but less free from punctures apically, the lateral tomentose line rather broader; scutellum larger and longer, more than a fourth as long as the elytra, perfectly smooth; elytra much broader, less than a fourth longer than wide, the costæ and general sculpture similar, the latter still rather sparser, the double lines less even and tending to disintegrate, the outer one ending in confused punctures basally in much the same way; lateral and apical lines of tomentum almost similar, the pygidium also nearly similar; abdomen with the transverse areas of tomentum more developed, separated internally by a much narrower glabrous line along the middle of the abdominal surface; tarsi longer. Length (♂) 12.0 mm.; width 7.3 mm. Guatemala..... ***solidula** n. sp.

7—Body oblong, stout, the elytra very slightly cuneiform, more distinctly in the male, shining, black, the pronotum rufous, with a broad black median vitta, the elytra each with an obliquely oval discal red spot just before the middle, the flanks throughout, except in less than basal third, having close-set transverse lines of tomentum, the median of which is much prolonged within, almost attaining the suture, its inner part subdetached and angulate; apex with a large spot of tomentum attaining the inner and apical margins and usually having a small nude spot equidistant from suture and apex; abdominal segments each broadly tomentose latero-basally and with a tuft of very coarse hairs at each side; sterna coarsely but not densely pubescent laterally; upper surface having very short sparse erect hairs, those on the elytra distinct by oblique light; head coarsely, densely punctate, with a transverse confused line of short coarse hairs at base, the clypeus less deeply sculptured and biobliquely rugulose, broadly parabolic; the broad and feeble apical lobes are each peculiarly tumid and subreflexed; prothorax a third wider than long, trapezoidal, with almost evenly arcuate sides, the punctures coarse, deep and dense, becoming less coarse and sparser medially, almost wanting medio-basally, each having a small erect hair; scutellum large, triangular, smooth; elytra fully a fourth longer than wide, the costæ almost obsolete, rather more evident toward the subapical umbo; punctures shallow, everywhere sparse and confused, with a regular sutural series; pygidium strongly, concentrically strigose, largely covered with tomentum and having distinct sparse erect hairs; teeth of the anterior tibiæ sharp, the two lower more approximate, spiniform and deflexed. Length (♀) 16.2 mm.; width 9.5 mm. Mexico (central). [*Cetonia biguttata* G. & P.]

***biguttata** G. & P.

A—Similar to *biguttata* in every way, except that the transverse lines of tomentum at the sides of the elytra do not extend to the apical solid tomentose area, but leave between that and the posterior of the lines a vacant space, equaling a fourth the total length of the elytra; solid apical spot not quite so large and more annuliform, enclosing a large black spot; hairs of the elytra not half as large, minute and discoverable only with care; clypeus not quite so broad, the very feeble apical lobes not so incrassate; thoracic punctures not quite so close-set, broadly sparse medio-basally;

abdomen and the anterior spiniform tibial teeth nearly similar; pygidium always nude, with a triangular spot of tomentum at each side. Length (♂ ♀) 15.0–17.0 mm.; width 9.2–10.0 mm. Mexico (Guerrero). Three examples.....***binoculata** n. subsp.

B—Nearly similar to *biguttata* in every way but a little smaller and less stout, the clypeus more rapidly and obliquely acuminate at apex, the latter less broadly obtuse, feebly bilobed; pronotum with the sculpture similar but with the punctures not quite so coarse or dense laterally; elytra exactly as in *biguttata* and with the flanks closely, transversely lineate with tomentum posteriorly to the large apical spot, which, similarly, has a very small black point toward the sutural angles, but here, there is a longitudinal line of short transverse tomentose spots from the inner end of the long submedial tomentose fascia to the solid apical area, this longitudinal line of spots sometimes paralleled by another partial series just external to it; elytral hairs minute but easily seen; pygidium solidly tomentose as in *biguttata;* anterior tibiæ in all the specimens at hand having the three teeth much shorter and very obtuse at their tips, probably an effect of wear, but in a singularly constant manner in all the six tibiæ of the three cotypes. Length (♂ ♀) 13.7–14.8 mm.; width 8.2–8.7 mm. Guatemala.

***biplagiata** n. subsp.

Body oblong-oval, almost as in *biguttata* in its shining lustre, glabrous upper surface and elytral and abdominal tomentum, but rather more elongate and black throughout above; head nearly similar, with a transverse basal line of stiff pale hairs; pronotum similar but with the punctures more broadly subobsolete medially and, toward the sides, shallower, forming oblique lines and having longer and much more distinct hairs; scutellum similar, perfectly smooth; elytra with similar sculpture and subobsolete costæ, but with the sparse punctures everywhere deeper, especially on the flanks, where there are about two short broad, inwardly projecting spots of tomentum, at basal third to two-fifths, and a broad irregular line from the margins inwardly nearly to the suture distinctly behind the middle, also with a large solid apical area, usually having a minute black spot as in *biguttata;* pygidium solidly tomentose, except medially toward tip; anterior tibiæ with three acute teeth nearly as in *biguttata*, except that they are more uniform in size, the upper larger and the two lower elongate and spiniform. Length (♂) 15.0–15.3 mm.; width 8.7 mm. Mexico (Villa Lerdo in Durango),—Hoege.

***lineoligera** Bates

8—Body rather narrowly suboval and notably convex, shining and deep black throughout, except slightly more than basal half of the elytra, which is abruptly bright red, excepting a large transversely quadrate basal spot involving the scutellum, which is black; upper surface with minute sparse erect hairs, longer on the pygidium and rather long, coarse, pale and conspicuous on the sterna and sides of the abdomen; head deeply and densely punctate, the clypeus feebly trapezoidal, with moderately rounded angles, the apex very feebly reflexed, obtuse, just visibly sinuate medially; prothorax a third or

fourth wider than long, the sides becoming subparallel basally, the basal sinus not so deep as in the preceding species; punctures rather coarse and dense, becoming sparse medio-basally, wanting along the base, without trace of an impunctate median line; scutellum smooth; elytra slightly broader at the humeri, with the usual deep sinus, distinctly elongate, sometimes feebly cuneiform, the costæ very feeble, the first sulcus with sparse, elongate-elliptic and posteriorly open incised annuli, tending to biserial arrangement, the second with similar but less narrow annuli, the flanks with deep and well separated, transversely lineiform punctures; toward apex, the annuli of the deeper sulcus adjoining the sutural carina become very elongate and rather confused; pygidium with dense concentric strigilation; anterior tibiæ with the teeth rather short and obtuse, the lower two but slightly more approximate; hind tarsi (♂) as long as the tibiæ. Length (♂ ♀) 9.7–11.0 mm.; width 5.5–6.0 mm. Mexico, Panama and Ecuador. [*Cetonia dimidiata* G. & P.]. . ***dimidiata** G. & P.

Body nearly as in *dimidiata* in form, sculpture and size, but differing in color and in the punctured scutellum, piceous-black, shining, sparsely clothed with very short inconspicuous pubescence; head coarsely and densely punctate, the clypeus more sparsely, the latter a little wider than long, with feebly arcuate sides and broadly rounded angles, the apical margin slightly reflexed and feebly sinuate at the middle; prothorax oval, narrowed in front, broader than long, the sides evenly arcuate, the base sinuate at the middle; surface moderately convex, coarsely but not densely punctured; scutellum coarsely punctured at the sides; elytra moderately convex, subbicostate, the intervals with variolate foveæ, which gradually become simple punctures toward the sides; sutural angles right; under surface sparsely clothed at the sides with yellowish hair, the abdomen very sparsely punctate and with a few hairs at the sides; tibiæ slightly fimbriate within; pygidium concentrically strigose; mesosternal button punctured and hairy beneath and in front; anterior tibiæ tridentate in both sexes, the two lower teeth more approximate; antennal club nearly as long as the rest of the antennæ; males smaller and narrower than the females. Length 10–12 mm. Texas (San Antonio).

devulsa Horn

The species described above as *childreni* answers to the description and figure given by the authors very well and, as there is no record of species of this particular section being found south of Nicaragua, it is highly probable that the locality attached by label to my single specimen is erroneous, especially as a typical example of the essentially Mexican *dimidiata* has the same locality label. If *childreni* and *thelasco*, as here described, are correctly identified, they are different species beyond any reasonable doubt. This *childreni* section, composed of very small pubescent species, is a difficult one to deal with, especially in the absence of the five

inadequately described types of Gory and Percheron; large and carefully collected series will be necessary before coming to any useful conclusion regarding the species, which are doubtless rather numerous. I believe, however, that the synonymy here suggested will prove to be very near the truth.

Devulsa Horn, is probably not closely allied to *dimidiata* and possibly may not belong to this group at all, but not having seen the species I am unable to do more than give the characters assigned it by its author.

Group VIII.

Subgenus **Parisorhipis** nov.

The single species forming the type of this group is, so far as I can discover, absolutely isolated and without even an approach to a close relative in the entire genus. The principal elements of distinction are stated in the foregoing table of groups. The clypeus is in general rather flat, the apex but little narrowed, with an angular sinus extending from side to side, the obtuse subdentiform lobe at each side gradually and moderately reflexed; on the vertex there are two large, elongate, densely punctate and conspicuously pubescent impressions, narrowly separated by a cariniform longitudinal line. The anterior tibiæ have two very long slender spiniform teeth at and near the apex and, just above them, the edge is broadly and feebly angulate but without trace of anything that could be called even a vestigial tooth. The mesosternum is in the form of a vertical polished glabrous plate, the exposed edge of which is separated from the metasternum by a deep, transversely eroded, punctate and very pubescent line. The tarsi are long and slender; only two joints of the posterior remain in the type, but these combined are more than half as long as the tibiæ. The type may be described as follows:

Form rather elongate-oval, moderately convex, very shining and black throughout, the pronotum with vague trace of metallic lustre; pubescence above very long, erect, evenly sparse throughout, a little closer on the pronotum and yellowish-cinereous, rather longer, very coarse, dense and conspicuous on parts of the sterna and femora, shorter and very sparse on the abdomen; head densely but not very coarsely punctate, a transversely sinuate line, bordering the impressions of the vertex posteriorly, subimpunctate and shining; antennal club black, not as long as the stem; prothorax a third wider than

long, the sides barely at all converging and straight or feebly sinuate to beyond the middle, there rapidly rounding, oblique and straighter apically; lateral margins reflexed, the bead narrow, polished; surface almost evenly convex, unevenly sculptured, the coarse and rather deep punctures mingled with others much finer, generally rather close, wanting along a tumid median line; two discal straight lines of white tomentum subequally trisecting the width, extend from near the apex to very near the base, each divided into three widely separated lines; laterally, there are a few minute tomentose points, but there is no marginal tomentum; base almost evenly rounded, without median sinus; scutellum smooth, polished; elytra a fourth wider than the prothorax, two-fifths longer than wide, with laterally rather prominent humeri, deep sinus and broadly rounded outer apical angles, each having three widely separated double sets of elongate incised annuli; which, inwardly toward apex, form long double lines, the flanks with fine sparse punctures; each elytron has small rounded spots of white tomentum, subequal among themselves and sparsely scattered over the entire surface; pygidium nearly flat, the surface with a broad, shallow, longitudinally partially divided impression toward apex and with numerous large, more than semicircular, deep, incised annuli, becoming small and denser along the median line, where they are mingled with minute punctures, also with three subdisintegrated spots of tomentum at each side, forming a triangle; apex subtruncate medially; under surface nearly free from tomentum. Length (♀) 11.7 mm.; width 6.8 mm. Texas (locality unrecorded).....**insignis** n. sp.

The characters of the pygidium and the rather small antennal club would seem to betoken the female, but there is no other way of estimating the sex of the unique type.

Euphoriaspis n. gen.

There are several discordancies in the species described by Dr. Horn under the name *Euphoria hirtipes*, that lead me to believe that generic separation of it would be the best course to pursue. There is no species of *Euphoria* where, for instance, there is not a clearly defined lateral marginal pronotal bead, not very strong in a few species such as *geminata* to be sure, but always evident and entire; here, there is no trace of this very constant feature of *Euphoria* and, besides this, the remarkable brush of hair on the inner side of the hind tibiæ, though said to be less marked in the female, and the medially thickened anterior tibiæ, are additional distinctive characters. Finally, the hind tarsi are peculiarly short, compact and strongly compressed, to as noticeable a degree as in *Euphoria hera* Burm., made the type of *Euphoriopsis* above. The very long and

abundant bristling pubescence gives to the type a distinctive appearance, not suggested in any species of *Euphoria;* it may be described as follows:

Body oblong-oval, rather convex, moderately shining, blackish-piceous, the elytra throughout pale luteous; pubescence pale yellowish-brown, very long, dense, bristling and conspicuous throughout above, beneath and on the legs, conspicuous but not so dense on the elytra; head finely, moderately densely punctate, the clypeus broad, shorter than wide, parallel, the apex distinctly reflexed and arcuate, with a mere vestige of a feeble medial sinuation; hairs radiating from a central point, very dense and long on the front and vertex; antennal club castaneous, not quite as long as the entire stem; prothorax short, nearly two-fifths wider than long, the sides more arcuate medially, parallel thence to the base, the basal sinus broad and shallow, the limiting angles obtuse and rounded; punctures fine, shallow, linear, dense and forming oblique lines laterally, more separated, deeper and punctiform medially, wanting along a well defined tumid median line, along the base and in an irregular oblique discal area at each side; scutellum acute, smooth, with a few fine setigerous punctures along the sides, except posteriorly, the surface apically with a feeble canaliculiform impression; elytra longer than wide, a fourth wider than the prothorax, subparallel, the humeri moderately prominent laterally, the sinus longer than usual and not so abruptly formed; suture obtusely elevated, more carinate posteriorly, the sutural angles dentiform and slightly produced; costæ feeble, stronger toward the subapical umbo, the intervals with close arcuate interlacing incised lines, becoming smaller, sparser, deeper and more punctiform on the flanks; pygidium with two widely separated umbones, the surface finely, densely, confusedly strigilate and with dense, very long and conspicuous pubescence; sterna laterally with fine irregular confused strigilation; abdomen finely, not very sparsely punctured medially, with a narrow deep groove along the middle basally in the male; anterior tibiæ shorter than the tarsi, about twice as long as wide, tridentate, the upper tooth feeble and obtuse, closer to the second than the latter is to the apical. Length (♂) 11.8–12.8 mm.; width 6.3–7.3 mm. Nebraska. [*Euphoria hirtipes* Horn] ..... **hirtipes** Horn

The female appears to be much less abundant than the male, of which I have at hand four specimens, received through the kindness of Mr. Knaus. The aberrant nature of this species seems to have wholly escaped the notice of the original describer, who does not even make any allusion to the side margins of the pronotum, very much abbreviated and compressed hind tarsi or the binodose pygidium of the male.

Tropinota Muls.

Among some material recently lent me by the Public Museum in Milwaukee, I noticed a small series of a species widely isolated from any other known North American type; they all bore the label "Utah," and I had held them to represent an undescribed genus until, by chance, looking over the European material in my collection, I found a species named *Tropinota hirta* Poda (*hirtella* Linn.), that matched the Utah series very well. This made the remark published by Horn (Pr. Am. Phil. Soc., 1880, p. 399), regarding a certain *Cetonia vestita* of Say, which was believed to be the same as *hirtella* Linn., and therefore relegated to European synonymy, doubly interesting. On comparing the Utah specimens with Say's description of *Cetonia vestita*, I find complete concordance; at the same time, while resembling closely the specimen representing the European *hirta*, which I have before me, they do not agree with the latter in all their characters. I therefore feel it advisable to describe this possibly Rocky Mountain form under Say's name provisionally as follows:

Form oblong, more rhomboidal (♂), much depressed above, the elytra deplanate; color gray-black, deeper and more shining beneath, the upper surface alutaceous or opaculate; vestiture gray, very long, herissate and conspicuous above and beneath, dense on the pronotum, less so on the elytra; head densely punctate, with very long dense pubescence, short, sparse and radiating on the clypeus, which is nearly flat, with the sides feebly converging and arcuate, the apex with a large deep sinus between two obtuse and slightly reflexed, dentiform projections; antennal club black, small and sexually equal; prothorax a fourth wider than long, very finely margined at the sides, which are inflated and rounded medially, narrowed basally, more so apically; base not sinuate medially; surface finely, very densely punctate, the impunctate median line sharply defined and obtusely cariniform, not expanded at base; scutellum confusedly punctured at the sides, but not medially; elytra slightly elongate, the sinus broad and not abrupt, the humeri but slightly prominent laterally; surface distinctly micro-reticulate, the costæ feeble, the inner obsolescent behind two-fifths, the outer more evident almost throughout; intervals each with two or three fine catenulate double incised lines, with intermediate series of larger and smaller punctures intermingled, the flanks rather abruptly steep and with small arcuate lineiform punctulation; pygidium with wavy irregular transverse incised lines and very long pubescence; mesosternal process arcuato-truncate, densely punctured and pubescent throughout; anterior tibiæ tridentate, subequally in both sexes, the upper tooth rather

long and pointed, the two lower very long, spiniform, somewhat deflexed and more distant than the upper two; hind tarsi rather long and slender, longer than the tibiæ in the male. Length (♂ ♀) 9.5–11.5 mm.; width 5.5–6.6 mm. Utah (?). [*Cetonia vestita* Say.]
vestita Say

The female has three catenulated double lines in the second interval on the elytra, while the male only has two and, in the former sex, the outer costa is much feebler and less continuous than in the other sex; there are also other sexual differences of more or less aberrant nature; the punctures of the scutellum, for example, are gathered in a small dense cluster at each side of the base in the male, but are larger and distributed in a regular line parallel to each side throughout the length in the female. On comparing the above described examples of *vestita* with my single female of the European *hirta*, the latter is seen at once to be rather less elongate, of a deeper and less grayish black and much less alutaceous, with the punctures of the scutellum large and loosely aggregated throughout nearly basal half, all the tarsi shorter though even more slender, and the tomentose spots of the elytra are less widely separated and in the form of finer, more undulated transverse lines. There cannot be much doubt that these Utah specimens represent a species different from that exemplified by my single European example of *hirta*, and, although it seems extraordinary that a species undoubtedly closely allied to *hirta* should occur in western North America, it must be borne in mind that the geographic range of *Tropinota* in the palæarctic fauna is very extended. One weak point in this case is the fact that *vestita*, if truly occurring in Utah, should be so rare as to have been overlooked by all recent collectors.

Anatropis n. gen.

The clypeus in this genus is exactly as in the preceding, showing that, at any rate, the peculiar *Tropinota* type of clypeus, which differs distinctly from any of the numerous types of *Euphoria*, is not a stranger to North America in an endemic sense. The general features of the body are, however, in the *Euphoria verticalis* of Horn, entirely different, not only from *Tropinota*, but from any other type, not only of *Euphoria* but of *Stephanucha*, with which it has no affinity whatever. I have in my collection but a single female example, which may be described as follows:

Body oblong-suboval, strongly convex, shining, piceous-black, the under surface and legs not quite so dark as the upper surface, which is completely glabrous, even the vertex without discernible hairs, those of the pygidium sparse and extremely minute, rather long and coarse, obscure fulvous and distinct on the sterna and hind coxal plate; head very small, with coarse, deep and close-set punctures, the vertex with a strong median tubercle; clypeus much shorter than wide, trapezoidal, the apex with a broad deep sinus between the two strongly reflexed dentiform processes; antennal club very small; prothorax large, two-fifths wider than long, convex, subevenly rounded at the sides and rather wider at the middle than at base, much narrowed anteriorly and with coarse, externally strongly and linearly punctate marginal bead; base with a broad and feebly truncate median lobe; surface with rather coarse but shallow, sparse punctures, somewhat deeper and more transverse toward the apical angles; scutellum smooth, with a single long closed incised annulus along each side toward base; elytra slightly elongate, with long, not very abrupt lateral sinus and moderately prominent humeri, the costæ very feeble, almost obsolete, the nearly flat intervals each with two series of large, finely umbilicate annuli, open behind as usual, and with a median line of smaller distant punctures; flanks with almost similar punctures, which are in greater part linear in arrangement; sutural angles obtuse, not in the least dentiform; pygidium feebly convex, with very fine and widely separated, subconcentric and inconspicuous incised lines; anterior tibiæ very moderately tridentate, the lower two teeth unusually approximate, separated by barely more than half the upper interval; tarsi short but notably slender. Length (♀) 11.5 mm.; width 6.7 mm. New Mexico. [*Euphoria verticalis* Horn]..... **verticalis** Horn

The Mexican species described by Mr. Bates under the name *Stephanucha bispinis*, has a clypeus which is somewhat as in *verticalis* and also has a strong tubercle on the vertex, but the body is conspicuously pubescent throughout; I think that it can probably enter this genus however.

Stephanucha Burm.

In this genus the body is compact, oblong-oval and unusually convex, in these respects resembling the last, but in nearly all other directions the differences are radical; the sculpture of the pronotum, for example, is fine and dense, the teeth of the anterior tibiæ large in both sexes, subequal among themselves and subequidistant or with the lower two more approximate, and there is no trace of a tubercle on the vertex. It is however in the very peculiar form of the clypeal apex that *Stephanucha* differs from any other known

American Cetoniid; the apex is not sinuate but strongly arcuate and, at the middle of the apex, there is a small vertically reflexed lobe, which is strongly bifid, forming two very approximate spiniform teeth; more laterally at apex there is at each side a very acute vertical spiniform process, not much larger than either tooth of the median pair; just above the point of antennal insertion the edge is vertically elevated, forming another very acute spiniform process. In the male the antennal club is feebly arcuate and distinctly longer than the entire stem, but in the female it is much smaller and is shorter than the stem. Burmeister states of *areata*, that the male seems to be rarer than the female; I find the exact reverse of this among my material, the male outnumbering the female about three to one on the average. There are three species among my material as follows:

Pubescence of the male everywhere long, bristling and conspicuous, that of the female much shorter. Body stout, just visibly rhomboidal, black, opaque above, shining beneath, the elytra fulvous, with a very large median area, more or less comminuted except near the suture, sides and apex, somewhat irregularly black, the black areas sometimes in part extending to the apex or retracted to half the elytral length and width; head strongly, densely rugose, densely pubescent on the vertex, the prothorax a third wider than long, somewhat narrower at base than just behind the middle, the sides rounded, the base strongly, evenly rounded medially; surface very densely punctured and with long, dense, very conspicuous yellowish-cinereous pubescence (♂), or with the punctures much coarser, distinctly separated and bearing much shorter, sparser and inconspicuous hairs (♀); scutellum small, very acute, smooth, opaque except at base; elytra opaque, only a little longer than wide, the costæ obsolete or very feeble, the punctures rather small and shallow but distinct, serial, larger, deeper, dense and confused or producing a rugose surface on the flanks; pygidium feebly, closely rugulose, more convex but not umbonate in the male, with long and fine (♂) or very short and sparser (♀) pubescence and having a large tomentose area at each side; anterior tibial teeth long, acute and triangular in both sexes, equidistant or with the lower two a little less separated; hind tarsi compressed, short and rather compact in the female. Length (♂♀) 10.7–11.5 mm.; width 6.6–7.0 mm. Kansas (Manhattan). A large series received some time ago from Mr. Knaus. . . . **pilipennis** Kr.

Pubescence subequal in the sexes and, in the male, much shorter and less conspicuous than in the preceding. 2

2—Teeth of the anterior tibiæ rather short and triangular; pronotum as in the preceding, never having a lateral tomentose area. Body narrower and more oblong than in *pilipennis*, the clypeal spines more equidistant among themselves; prothorax nearly similar in

form, rather finely, very densely punctured throughout and with erect, dense and moderately long pubescence (♂), or with the punctures not quite so small and not contiguous, with slightly shorter pubescence (♀), the sexual differences in sculpture and pubescence far less marked than in *pilipennis;* scutellum similar; elytra rather more distinctly elongate, opaque, pale reddish-flavate, the black sutural markings much more contracted, the transverse bar behind the middle more differentiated and the flanks entirely pale to partially black, the entire base sometimes broadly black, the apex black; punctures minute and very feeble, generally not evident anywhere except toward the sides, the apical black area feebly rugulose; erect hairs very short and sparse, minute in the female; pygidium rather more acutely tumid along the median line, feebly vermiculato-rugulose, differing but little in the sexes, having a much smaller tomentose spot near each side than in *pilipennis.* Length (8 ♂, 1 ♀) 10.4–11.5 mm.; width 5.8–6.5 mm. New Jersey. [*Cetonia areata* Fabr.]..... **areata** Fabr.

Teeth of the anterior tibiæ very long and spiniform, the lower two somewhat bending downward; pronotum always with a large comminuted area of tomentum near each side. Body slightly larger, much stouter, nearly similar in coloration, ornamentation, sculpture and vestiture; spines at the clypeal apex equidistant; prothorax nearly two-fifths wider than long, somewhat inflated basally, the sides very oblique anteriorly, widest well behind the middle, the base evenly and strongly rounded; surface finely and densely punctate and with close, dense and moderately long hairs (♂), or with the punctures distinctly larger but shallow, close-set and with the erect hairs everywhere notably short (♀); elytra but little longer than wide, subparallel in the female, slightly cuneiform (♂), the costæ almost obsolete, the punctures minute and indistinct; pygidium feebly convex and subsimilar in the sexes, finely, closely rugulose, having a large irregular tomentose spot near each side (♂), or completely and very densely tomentose, with the median line apically—expanding at apex—nude, the hairs minute, not evident in the female; anterior tibial spines long and subequidistant; hind tarsi as in *areata*, much longer and more slender than in *pilipennis*, especially in the female; each abdominal segment has a triangular spot of tomentum at each side. Length (♂ ♀) 11.5–11.7 mm.; width 6.6–7.0 mm. Florida. Two examples..... **thoracica** n. sp.

Pilipennis is a species much more radically different from the two Atlantic coast species, than would appear at first sight; this is proved, not only by the very long shaggy pubescence of the male, but especially by the structure of the hind tarsi and elytral sculpture. In one male example of *pilipennis* in my series, the elytra are almost wholly black, the buff-red tint being reduced to very small disconnected areas at some distance from the sides and apex.

Tribe CREMASTOCHEILINI.

The moderately numerous genera of this important section of the Cetoniinæ have a peculiar facies distinguishing them from either the preceding Cetoniini or the Trichiini, which follow, and their more specialized structural features, such as the cupuliform mentum, tetrahedral basal joint of the antennæ, serving to close the clypeofrontal gap at the sides, and prominent tubuliform posterior spiracles of a large proportion of the species, as well as the inquiline habits of many others, also separate them widely from any of the neighboring groups, so that the proposal of full tribal rank for them seems amply justified. Sexual differences, at best not very marked in most of the Cetoniids, become virtually altogether unobservable here, so that the sexes will not be referred to separately. In a long series of *Cremastocheilus schaumi* Lec., at hand, I find that the mentum is flat, with abruptly reflexed margins in some specimens, and deeply, subevenly concave in others; this does not occur, at least in so marked a way, in any other species of *Cremastocheilus* before me, but is observable to exactly the same extent in the genus *Trinodia*, where it appeared to form a remarkable specific character, until accidentally noticed in the very homogeneous *schaumi* series mentioned; it is probably a sexual character.

Africa and North America are now, singularly enough, the principal abodes of these peculiar insects, the former doubtless being their place of origin, though some of the largest species of the tribe, such as *Cyclidius elongatus*, inhabit South America, whence the North American archetypes were derived through migration in geologic time probably not so very long ago. The rupture of the South American—African land connection was much more remote in time, as shown by the complete lack of harmony prevailing between the members of the tribe now inhabiting these two continents. The tribe is also represented in the East Indies and China, through migration from Africa by way of the Madagascar—Ceylon bridge, but it is wholly unknown in Australia apparently.

The North American species are assignable to five distinct genera as follows:

Pronotum not trilobed 2
Pronotum trilobed longitudinally; basal thoracic angles prominent. . . . 5
2—Basal angles of the prothorax not at all prominent 3

Basal angles prominent, abruptly shining, generally but not always subisolated by an obliquely impressed line.....4.

3—Body stout and massive, the basal thoracic angles broadly rounded; mes-epimera very feebly convex and not prominent from above, the elytra broadly convex, each with two feeble costules as in Cetoniini. [Type *Ps. leucosticta* Burm.].....**Psilocnemis**

Body narrow and elongate, the basal thoracic angles obtuse but not broadly rounded; mes-epimera greatly visible from above, tumid; elytra abruptly flat on the disk, not bicostulate. [Type *G. velutinus* Westw.].....**Genuchinus**

4—Legs long, the anterior tarsi distorted; head elevated and cariniform along the sides and deeply transversely fossate at base; elytra with the deplanate discal part margined each side by an elevated ridge; body rather large in size. [Type *Cremast. planatus* Lec.].
Macropodina

Legs short, the anterior tarsi not distorted; head not elevated along the sides or transversely fossate at base; elytra sometimes nearly flat but never having a sublateral abruptly elevated ridge; pronotum without trace of marginal beading as in *Macropodina*. [Type *C. castaneæ* Knoch].....**Cremastocheilus**

5—Body rather slender, parallel, the elytra convex laterally; legs short, the tarsi regular, nearly as in *Cremastocheilus*. [Type *Cremast. saucius* Lec.].....**Trinodia**

The vast majority of the species belong to the last two genera of the table and *Genuchinus* is the only genus that extends far to the southward and into South America. The South American *Cyclidius* of MacLeay is not defined above, as I only have *elongatus* Oliv., at present and there are apparently two genera confounded among its few described species.

Psilocnemis Burm.

Although suppressed for some unaccountable reason by Dr. Horn in his revision of *Cremastocheilus* (Proc. Am. Phil. Soc., 1879, p. 382), this genus is amply valid. The body is more ventricose than in any other, the head and prothorax being rather small in comparison with the hind body. The mentum is unusually large and transverse, nearly flat at the bottom, with strongly reflexed posterior edge, which is feebly and posteriorly lobed at the middle, the anterior margin broadly, transversely subtruncate, the lateral angles well marked but not sharp and the surface highly polished and sculptureless; the vertical anterior surface of the reflexed clypeal apex forms a large polished plate adjoining the anterior margin of the mentum and having its lower edge sharply defined,

at least at the sides, feebly sinuate and more obtuse medially. The outer face of the basal antennal joint is deeply concave, smooth and polished. The legs are almost of the usual type in *Cremastocheilus*, except that the anterior tibiæ are slightly bent, the two teeth small and unusually remote. The tarsi are very short and compact, with the cross-section of the joints triangular. The type is individually rather rare in collections and may be described as follows:

Body stout, rather convex, deep black, highly polished and feebly, remotely sculptured throughout, the elytra sometimes with small cretaceous areas at the sides; head two-thirds as wide as the prothorax, feebly, evenly convex, finely, not densely punctate, the surface evenly and feebly sloping from the base to the reflexed apex of the clypeus, without break at the anterior part of the front, the clypeus slightly sloping laterally and with the edges there feebly reflexed, abruptly and rather deeply constricted above the antennæ; prothorax transversely oval, two-fifths wider than long, two-thirds as wide as the elytra, widest at the middle, the sides subevenly and strongly rounded and continuously arcuate around the obliterated basal angles to outer third, where the groove just within the edge, continually wider internally, terminates abruptly; outer marginal bead rather fine but strong; feeble apical sinus as wide as the base and arcuately prominent at the middle; punctures sparse, moderate medially, gradually less sparse and larger laterally; scutellum of the usual basally broad, apically finely attenuate, form, with rather strong scattered punctures basally and thence posteriorly, near the sides, with fine feeble subconfluent punctulation; elytra a third longer than wide, the humeri laterally rather prominent, the sinus deep, the external apical angles broadly rounded, the sutural obtuse and rounded; surface with small narrow sparse angulate annuli, wanting on the broad costæ and, on the flanks, becoming fine sparse punctures, faintly subrugose near the lower edges; pygidium strongly convex, with moderate close-set circular annuli, becoming very fine sparse punctures apically and transverse wavy lines basally; legs very sparsely, feebly sculptured, the femora and sterna with short or longer, very fine oblique scratches. Length 12.8 mm.; width 6.0 mm. North Carolina (Southern Pines),—Manee; also found in Maryland. [*Crem. polita* Schaum].....**leucosticta** Burm.

The small tomentose spots, because of which the name was given by Burmeister, seem to be very variable, since, on the Southern Pines examples, above described, there is no trace of any such spot, even the most minute, on any part of the surface, the integuments being smooth and extremely polished. It is of course possible that there may be more than one species and that the above is not really

leucosticta; the description of Horn would seem to indicate that the sides of the prothorax were more evidently angulate and the base at the sides less reflexed in the Maryland specimen of the Ulke collection, upon which his description was founded, and the thoracic base in that specimen is said to be feebly emarginate medially; it is transversely truncate here; the figure on the plate indicates a more elongate body, with relatively larger head and prothorax in the Maryland specimen, which doubtless represents the typical *leucosticta.*

Genuchinus Westw.

In many respects this genus comes much closer to the preceding than to any other, having the same uniform slope of the upper surface of the head from the base to the reflexed clypeal apex, but here the body is very elongate, depressed above, with the elytra opaque except on the flanks; the mentum is much less transverse, more pointed behind and nearly flat, reflexed posteriorly as in *Psilocnemis*, but it is always distinctly sculptured in rugulose lines; its lateral sinus is more evident. The anterior tibiæ are straight, slender and normally bidenticulate and the tarsi are longer, with freely articulated joints; the first antennal joint is rugulose and nearly flat on its outer face. The species may be known as follows:

Elytra distinctly cuneiform; prothorax transverse, nearly one-half wider than long. Body black, feebly shining; form relatively elongate; head coarsely and closely variolate-punctate; occiput not transversely compressed; front flat, the clypeus narrowly reflexed; prothorax broader than long, the general form hexagonal; anterior angles slightly acute, the posterior obtuse; surface feebly convex, with very coarse, moderately deep and rather close-set punctures; elytra with the flat discal part having very elongate variolate foveæ, the sides very coarsely punctured; pygidium with coarse variolate punctures; legs ambulatorial, relatively slender, the anterior tibiæ bidentate near the tip, the middle and posterior toothed at the middle and with coarse teeth around the apex; tarsi nearly as long as the tibiæ, cylindric; under surface very coarsely but sparsely punctate. Length 12.5 mm. Arizona,—L. E. Ricksecker. A single example. [*Cremastocheilus ineptus* Horn]. . . . . **ineptus** Horn

Prothorax much less transverse, never more than a fifth or sixth wider than long, with a dense line of tomentum along each side but abbreviated anteriorly; elytra parallel or nearly so and with minute scattered points of tomentum, particularly evident along the upper part of the flanks. Body very slender, black, rather shining, excepting the opaque flat discal part of the elytra, which is devoid of

any trace of costæ; head flat, gradually sloping above and with small shallow dense umbilicate areolæ, two-thirds as wide as the prothorax, the latter fully three-fourths as wide as the elytra, hexagonal, widest and laterally more or less evidently subangulate at the middle, the sides thence equally oblique and nearly straight apically and basally, the base evenly and strongly arcuate between the angles, which are obtuse but sharply defined; surface very evenly and moderately convex, with relatively rather coarse deep close-set punctures, the interspaces with partial opacity and some minute punctulation, which is very unevenly distributed; apex feebly sinuate, slightly narrower than the base and subprominently arcuate medially; bead along the side margins extremely fine; scutellum with rather coarse shallow annular areolæ and partial opacity; elytra three-fourths to four-fifths longer than wide, the humeri broadly rounded externally, the sinus long and shallow, the mes-epimera tumid and very conspicuous before the humeri and tomentose along the latter; punctures on the flattened opaque discal part close-set, in the form of very elongate incised annuli, smaller and shorter apically, those of the flanks rounded, deep, close-set and moderately coarse along the upper or polished tomentum-bearing part, and shallow, variolate and rounded on the lower or non-tomentose part; pygidium convex, with close-set and deeply incised, umbilicate annuli; sterna and hind coxal plate and abdomen with similar incised annuli, which are rather more separated, the punctures medially sparser, smaller and deeper; femora and tibiæ strongly punctate, the anterior as in the preceding, the hind tarsi three-fourths to four-fifths as long as the tibiæ. Length 12.0–13.8 mm.; width 4.2–5.0 mm. Arizona (Baboquivari and Santa Rita Mts.), also two examples from Dunn and Levette.

angustus n. sp.

If the figure of *ineptus*, given by Horn, is even approximately correct, *angustus* is in no way closely allied, being much more slender than that species and with the prothorax barely wider than long. No tomentose spots of any kind are mentioned in describing *ineptus*, but these are conspicuous in all my specimens of *angustus* and the lateral tomentose border of the pronotum is particularly noticeable. The above description of *ineptus* is derived from the original and also from the published figure.

Macropodina n. gen.

This genus is not closely allied to *Psilocnemis*, as thought by LeConte, because of the very different habitus of the body, which is oblong, much depressed and with radically different structure of the head and legs, more particularly the anterior tarsi, which, apparently in both sexes, have the last two joints abruptly much

enlarged and otherwise specially modified. The clypeus is very different from that of *Psilocnemis* in having the external apical surface strongly inflexed and not vertical. The mentum, also, is narrower, concave, shallowly punctate, not at all sinuate but evenly rounded at the sides and with the median part of the hind margin acutely prolonged. The singular lateral carinæ and transverse basal fossa of the head are generic in significance beyond a doubt. The legs are longer than in any other type of the tribe known to me, native or foreign. I have at hand two distinct species of this genus, definable as follows:

Prothorax not more than a fourth wider than long. Body moderately stout and shining, very depressed, deep black throughout, without cretaceous spots; head fully half as wide as the prothorax, the lateral carinæ sharp, highest behind, not quite attaining the reflexed clypeal apex, the obtusely elevated median part of the vertex gradually narrowing anteriorly, becoming a fine carina apically, not very coarsely but strongly, somewhat closely punctate, the lateral depression along the carinæ with very shallow foveæ anteriorly, becoming subimpunctate posteriorly like the transverse basal groove; clypeus with the apex strongly and rapidly reflexed, transversely truncate from a dorsal viewpoint; basal antennal joint gradually much attenuated basally; prothorax widest near apical third, the sides evenly rounded, converging and straighter basally; base broadly, evenly arcuate, the angles polished, subdetached by an oblique sulcus, their outer outline continuous with the sides, the apical angles obtusely nodular because of a coarse external fossa; surface rather depressed, feebly impressed along the middle, deplanate toward the sides, which are without vestige of beading, the punctures coarse, well separated, becoming closer and deep laterally; the punctuation crosses the depressed median line without change in character; scutellum well developed, gradually finely attenuated apically and having sparse shallow incised annuli; elytra slightly more than one-half longer than wide, almost one-half wider than the prothorax, parallel and rectilinear at the sides, rapidly rounding and obtuse at apex, the lateral sinus long and shallow; surface flat and with two feeble costæ, the summit of the flanks abruptly and strongly elevated, the punctures elongate incised annuli, open behind and with the incised lines slightly burred at the edges; on the flanks they become smaller, more rounded and very deep, except beneath, where they are again very shallow; pygidium convex, with scattered rounded annuli, strongly carinate except at base and apex; under surface with large scattered incised annuli, open behind; legs long, slender, the anterior tibiæ slender, slightly arcuate, obtusely bidentate apically, the anterior tarsi equal in length to the tibiæ, the fourth joint much swollen, transverse, more rounded within, obliquely sinuato-truncate and ciliate

apically, the fifth joint more than one-half longer than wide, narrowed apically, closely joined to the fourth but not quite so wide; hind tarsi slender, three-fourths as long as the tibiæ. Length 15.0 mm.; width 6.3 mm. Arizona (San Bernardino Ranch, Cochise Co.). [*Cremast. planatus* Lec., and *depressus* Horn]. *Depressus* is from southern California..... **planata** Lec.

Prothorax larger and more transverse, nearly one-half wider than long. Body larger and stouter, rather dull in lustre, deep black and nontomentose throughout; head larger, fully half as wide as the prothorax, nearly as in the preceding, except that the punctures are larger and subequal throughout, more shallow on the clypeus but extending, coarse and distinct, along the lateral depressions nearly to the deep basal fossa, which is impunctate; basal antennal joint with its outer face feebly concave, attenuate basally and with longitudinal rugulosity; prothorax widest near apical third but with the sides more evenly arcuate throughout, much less straight basally than in the preceding; base transverse medially, with a small projecting angulation at the middle, the angles nodular, with a deep oblique inner sulcus, the nodular part frequently lost; apical angles as in *planata* but with the outer fossa larger and deeper, the tuft of orange spongiose pile internally at apex more distinct; surface more broadly and feebly impressed along the middle, the punctures larger, very shallow, dense in the median depression, gradually rather close and less shallow but not deep and of similar size laterally; scutellum large, acuminate, with large shallow annuli aggregated only at base and along the sides; elytra three-fifths longer than wide, barely more than a third wider than the prothorax, parallel, in general structure as in *planata*, except that the costæ are almost completely obsolete, the very elongate annuli almost similar but longer and narrower and with the incised lines finer, the deep punctures on the lateral carina more elongate than in *planata;* pygidium similar but with the annuli larger and less incised; legs longer; anterior tibiæ longer, not so slender, tumid externally at and near the apex but not dentate, the anterior tarsi much longer, even longer than the tibiæ, the fourth joint more quadrate, somewhat longer than wide, similarly with an internal apical incisure to receive the fifth joint when internally flexed, but the notch is deeper, the fifth joint longer, almost twice as long as wide; posterior tarsi longer though scarcely three-fourths as long as the tibiæ, each joint similarly somewhat inflated apically. Length 17.7 mm.; width 7.7 mm. California (Alameda Co.),—Nunenmacher..... **ampla** n. sp.

My single example identified above as *planata* Lec., is considerably smaller than the type of LeConte, which measures 18 mm., according to the description, but the prothorax is of the same form apparently, "latitudine paulo breviore," as it is also in *depressa*, "one-fourth broader than long"; this is very different from the dimensions noted in *ampla*, so that the latter, on this account, as

well as its very different habitat, is probably abundantly distinct from *planata*, whether *depressa* is really identical with the latter or not; no accurate description of the remarkable anterior tarsus is given by either author.

Cremastocheilus Knoch.

This is the typical genus and probably also the largest of the tribe; it is wholly confined to subarctic North America. Among the African genera *Scaptobius* Schaum, resembles it most closely, but even here it is merely a question of outline and subsimilarity of the hind thoracic angles, as the sculpture is of an entirely different order. The head in *Cremastocheilus* differs very much from that in any of the preceding genera, the vertex and front being uniformly convex, not at all carinate along the sides and sloping more or less abruptly anteriorly to the reflexed clypeus. The tarsi are varied in form, sometimes very short and compact as in *schaumi*, thence becoming longer, though still compact, as in *westwoodi*, to a rather long and slender form as in *canaliculatus*, or what is termed "ambulatorial" by Horn, though just why the short tarsi of *schaumi* will not admit of ambulatorial progress just as well, is not exactly clear. The anterior tibiæ are bi- or tridentate, the latter condition very rare but distinctly developed in *tridens*.

The mentum is deeply concave as a rule, but may be flat, with reflexed posterior edges, this being probably often influenced by sex, since both forms occur occasionally in the same species, as for example in *schaumi*. In certain species, principally eastern, the mentum has a large deep posterior sinus; in others, such as *squamulosus*, this sinus becomes very small though still deep; in others, as *variolosus*, still smaller and at the same time shallower; again, as in *schaumi*, the sinus wholly disappears, leaving a rounded posterior edge and finally, in still other species, such as *knochi*, almost wholly western in habitat, the posterior edge becomes prominently angulate at the middle. It is because of this inconstancy that I am unable to admit the validity, even subgenerically, of the name *Myrmecoconus*—subsequently altered by pen in distributed separata to *Myrmeceicon*—recently proposed by Mr. W. M. Mann (Psyche, XXI, p. 179), to include those species having the mental plate entire and angulate behind. The author definitely stated the type of his new subdivision of the genus, leaving thus no doubt of his

meaning and, if one will but compare *knochi* with the other species, he will observe at once that there is no indication whatever of that difference of general habitus, which, though perhaps sometimes feeble, always accompanies to greater or less degree a valid generic or subgeneric group of species. If Mr. Mann had designated as his type such a species as *planatus*, for instance, which likewise has a posteriorly angulate mentum in common with *knochi*, as also in common with the genera *Psilocnemis* and *Genuchinus*, his name would perforce have had to be adopted as that of a distinct genus, notwithstanding its indecisive characterization.

After careful study of Westwood's descriptions in the "Thesaurus," I am convinced that the synonymy given by Horn is warranted by the literature, though possibly not by all the facts were the types accessible for study. The numerous species of *Cremastocheilus* now in my collection may be known as follows:

Mentum with a large deep subparallel sinus at base; anterior tibiæ bidentate as usual.....2
Mentum with a very small, though narrow and parallel notch.....7
Mentum with a small shallow and sometimes almost completely obsolete triangular or rounded notch.....8
Mentum entire at base, rounded to prominently angulate; anterior tibiæ sometimes tridentate.....9

2—Pronotal punctures rather small and very uneven in distribution, a large transverse median area of the surface largely impunctate and having an impression near each side. Body deep black, very strongly shining, the legs black; head deeply, closely and sometimes confluently punctate, the clypeus strongly reflexed, truncate when viewed vertically; prothorax fully two-fifths wider than long, the sides peculiarly straight and parallel, the apical angles convex, the inner cavity large and deep, not extending to the outer edge, the hind angles sharp, defined externally by a moderately deep abrupt sinus; surface rather uneven, glabrous excepting a dense cluster of short thick hairs at each side behind the middle; upper surface of the depressed hind angles finely, densely punctate basally; scutellum with numerous moderate punctures throughout; elytra elongate, distinctly cuneiform, at base fully a third wider than the prothorax, the surface irregular, with two broad feeble longitudinal furrows, coarsely, densely and strongly punctate, the punctures inclosing oval flat opaque areolæ, smaller, deeper and still denser at the sides; hairs short, sparse and coarse; pygidium convex, closely punctate and with short coarse hairs; under surface with shallow, moderate, rather sparse annuli; hind tarsi rather short and compressed, nearly three-fourths as long as the tibiæ. Length 9.3–11.0 mm.; width 4.0–5.1 mm. New Jersey and New York. Nine examples.
harrisi Kirby

Pronotal punctures larger, closer and almost uniformly distributed, sometimes sparser at base, the surface not strongly impressed medially at the sides.....3

3—Hind angles not completely delimited by an oblique impression; pronotal punctures moderately coarse and evenly dense to the basal margin. Body rather elongate, the elytra parallel to very feebly subcuneiform, rather shining, deep black, the erect hairs very short, sparse, moderately coarse, evenly distributed but usually lost on the pronotum, the elytra with a small transverse cretaceous spot at each side behind the middle; head deeply and subconfluently punctate, evenly, feebly convex, very steeply declivous to the abruptly reflexed clypeus, which is truncate from a vertical, evenly arched from an anterior, viewpoint; prothorax barely two-fifths wider than long, larger than in the preceding, subevenly convex, more or less distinctly impressed along the median line, broadly and feebly impressed along the sides, the punctures deep and close-set, not quite so close and rather larger and shallower near the sides; anterior angles with the inner fossa large, cavernous, not extending to the sides, the hind angles but little less than right, sharp, only very moderately retracted and finely, feebly punctate; scutellum with numerous shallow annuli, widely open behind; elytra two-fifths wider than the prothorax, not quite one-half longer than wide, the external angles broadly rounded; surface rather uneven, generally with two broad faint longitudinal impressions and more or less rugose transversely toward the suture, the shallow opaculate areolæ very elongate, rather close-set, becoming smaller, rounder, deeper and sparser on the upper part of the flanks as usual; pygidium strongly, subevenly convex, with rather small and close-set punctures and minute erect coarse hairs; hind tarsi more slender than in *harrisi* and almost as long as the tibiæ (♂), shorter (♀). Length 10.0–12.4 mm.; width 4.7–6.0 mm. Massachusetts (Framingham) to North Carolina (Asheville). [*Crem. hentzi* Harris].....**canaliculatus** Kirby

Hind angles completely delimited by an oblique impression.....4

4—Hind angles moderately retracted.....5

Hind angles conspicuously retracted.....6

5—Body shorter, smaller and more oblong, than in *canaliculatus*, the pronotal punctures very much coarser, the sparse erect hairs much longer, moderately coarse; elytra sometimes with a small cretaceous spot near each side behind the middle, usually indistinct however; head coarsely, irregularly punctate, the abruptly reflexed clypeus usually with fine punctulation; prothorax short, three-fifths wider than long, feebly impressed along the median line, very feebly impressed along each side behind the subimpunctate swelling just behind the cavity within the anterior angles, which are narrower and less continuous with the sides than in the preceding, the hind angles finely punctulate, much depressed below the general level, the depression abrupt; sides converging anteriorly from behind the middle; scutellum with few to many coarse opaque areolæ; elytra more or less uneven and subrugose, the large elongate-oval opaque areolæ rather close-set, becoming smaller and deeper but still coarse later-

ally; pygidium convex, with coarse, shallow but impressed, well separated areolæ, the apex more shining and with a transversely oval pit, deep to evanescent; hind tarsi moderately compressed, slightly shorter than the tibiæ. Length 8.2–10.5 mm.; width 4.0–5.1 mm. New York to North Carolina. Common. [*Crem. lecontei* Westw.]..... **castaneæ** Knoch

Body nearly as in *castaneæ* but somewhat smaller and narrower, the sparse vestiture very short, moderately coarse, the elytra without lateral cretaceous spot in the type; head nearly similar; prothorax smaller in size, one-half wider than long, almost similar in form and in the coarse sculpture, except that the punctures are more close-set, the basal angles more acute and more densely punctulate, but otherwise almost similarly formed; scutellum and elytra nearly similar in general characters, but with the sculpture of the latter much coarser and more rugose; pygidium with smaller areolæ, the apical impression obsolete; legs almost as in *castaneæ*, the hind tarsi nearly as long as the tibiæ. Length 8.7 mm.; width 4.2 mm. Manitoba (Aweme), —Criddle..... **pocularis** n. sp.

Body somewhat as in *castaneæ* in form and size but with the prothorax more nearly as in *retractus*, except that the hind angles are less retracted, being scarcely more so than in *castaneæ*, the punctures much smaller than in that species and nearly as in *retractus* and, as in the latter species, becoming notably shallower and sparse basally; head deeply, subconfluently punctate, the abruptly reflexed clypeus broadly sinuate when viewed vertically, arched as usual viewed anteriorly; emargination of the mentum not so large as in *castaneæ*, deeper and relatively narrower than in *retractus;* prothorax in form and in the nature of the apical and basal angles almost exactly as in *castaneæ*, but not quite so short, with much less coarse and more close-set punctures, bearing each, not a long erect hair, but an extremely short broad scale-like hair, the nodule of the apical angles larger and more elongate, that of the hind angles similarly depressed but more rectangular; scutellum with shallow foveæ, sparse apically; elytra nearly as in *castaneæ* but with the areolæ less elongate and bearing very small erect hairs; pygidium convex, flattened and smooth at apex, having coarse uneven separated punctures, which, basally, become very fine, each bearing a minute hair; hind tarsi compressed, not quite as long as the tibiæ, each joint with a basal impression on the outer side. Length 10.0 mm.; width 4.5 mm. Iowa (locality unrecorded). A single specimen. . **brevisetosus** n. sp.

6—Legs and entire body deep black, dull above, shining beneath; vestiture rather abundant, moderately long, erect, very coarse, the hairs thick at their bases, becoming sharply pointed apically; head deeply and closely punctate, shining, the strongly reflexed and broadly sinuate clypeus polished and sculptureless; prothorax one-half wider than long, the sides abruptly transverse near basal third to the bottom of the deep sinus bounding the sharp depressed hind angles externally, feebly arcuate and slightly converging thence unbrokenly to the apex of the apical processes, which are bounded internally by large deep cavities having, as usual, a dense tuft of short setæ on

each of its side walls; surface opaculate, the punctures strong and rather close-set but much less coarse than in *castaneæ* or *pocularis*, very sparse basally and wanting in a small area just behind the apical cavities; median line barely impressed; scutellum with rather small feeble areolæ, wanting near the sides; elytra not quite one-half longer than wide, very feebly cuneiform, about a fourth wider than the prothorax, the surface with two very faint longitudinal impressed lines, nearly flat on the disk and subopaque, shining and with deeper punctures laterally, the shallow areolæ elongate-oval, open behind; pygidium convex, opaque, with moderate shallow punctures, gradually smaller basally, each bearing a distinct coarse hair, the surface at apex smooth and polished; hind tarsi moderately slender and compressed, barely three-fourths as long as the tibiæ, the basal external impression of each joint smaller and more sharply defined than in *brevisetosus*. Length 10.9 mm.; width 5.5 mm. Iowa (Keokuk). Texas—LeConte. A single specimen. [*Crem. walshi* Westw.] ..... **retractus** Lec.

Legs rufous or rufo-piceous; elytral foveolæ very much smaller than in any of the preceding species; body more slender, never very deep black, shining above, polished beneath; body blackish-piceous, the apical parts of the head and the apical and basal thoracic angles rufescent; erect hairs sparse, very short, attenuated from their bases; head with rather fine, irregularly sparse punctures, the clypeus strongly reflexed, sinuato-truncate, the apical inferior inflexed surface smooth; mental notch as in *castaneæ*; prothorax slightly less than one-half wider than long, the sides from the long oblique straight line limiting the hind angles nearly straight and feebly or scarcely at all converging to the rounded apex of the anterior processes, the internal cavities adjoining which are deep and large; hind angles piceo-rufous, acute, with arcuate external outline, much retracted and depressed below the general level; punctures only moderately large, not very deep or dense and somewhat unevenly distributed, sparse basally and coarser, though rather less well defined, laterally; scutellum with moderate areolæ, wanting toward the sides; elytra subparallel but with rather prominent humeri and broadly rounded external angles at apex, nearly one-half longer than wide and distinctly wider than the prothorax, the longitudinal impressed lines almost obsolete; surface feebly and vaguely subrugulose, the areolæ well separated, small and very narrow, the flanks with very moderate or rather small, deep and rounded punctures; pygidium convex, rather closely, moderately punctate, the apical part more sparsely punctate but not impressed; hind tarsi strongly compressed, slender on the edges, distinctly shorter than the tibiæ. Length 8.3–10.7 mm.; width 4.0–5.1 mm. Colorado (Denver and Fort Collins) and Kansas. **incisus** n. sp.

7—Body small in size, rather elongate, not very depressed above, shining, black, the punctures of the upper surface bearing each a small erect whitish scale, which is deeply plumose at apex; head evenly convex, closely punctate, more gradually declivous anteriorly than usual, the clypeus abruptly and very strongly reflexed, sinuato-truncate;

prothorax convex, one-half wider than long, the sides arcuate, strongly converging basally to the small smooth polished nodular basal angles, which are thus much retracted, separated by an oblique groove; apical angles smooth and noduliform, the cavities moderate, not extending at all outward; median line feebly impressed; base slightly sinuato-truncate medially; punctures moderate, deep, not dense, rather sparser toward the sides; elytra widest at the rather prominent humeri, a third wider than the prothorax, distinctly elongate, the outer angles very broadly rounded; surface subeven, though slightly rugulose, the areolæ small, elongate and unusually close-set, becoming rather coarse deep dense punctures on the flanks; pygidium very convex, strongly and not densely punctate, sparsely squamose; two teeth of the anterior tibiæ well developed, acute, the hind tarsi not distinctly compressed, rather slender, as long as the tibiæ. Length 8.3–8.5 mm.; width 4.0–4.2 mm. North Carolina (Southern Pines). Florida—LeConte. [*Crem. junior* Westw.] **squamulosus** Lec.

8—Form subparallel, rather depressed above, dull in lustre, shining at the sides of the elytra and beneath, deep black, the erect hairs simple and of very moderate length; head coarsely but not deeply, confluently punctate, the clypeus smooth, polished, strongly reflexed and sinuato-truncate; prothorax moderately convex and nearly one-half wider than long, without trace of impressed median line, coarsely, closely areolate, the areolæ shallow and opaque; basal angles very strongly retracted, polished, noduliform and separated by an oblique groove, the apical small, narrow, wholly isolated by a deep groove extending from the cavities to the sides; scutellum with very large shallow opaque areolæ; elytra with larger but less prominent humeri than in the preceding, subparallel, the outer angle broadly rounded, the post-humeral sinus shallow; surface dull, with large elongate-oval and very shallow, still more opaque areolæ, defined by fine but rather shining edges, the flanks with very coarse, deeper, subcontiguous punctures; pygidium strongly convex and dull, with small arcuate shining lines representing the outer sides of shallow areolæ; two teeth of the anterior tibiæ rather large and blunt, the hind tarsi distinctly compressed and much shorter than the tibiæ. Length 8.7–9.0 mm.; width 4.0 mm. North Carolina (Southern Pines),—Manee. Middle States—Horn. [*Crem. sayi* Harris and *cicatricosus* and *percheroni* Westw.] ..... **variolosus** Kirby

9—Posterior angles of the prothorax small, pointed, noduliform, greatly retracted and separated by a deep oblique groove. Body moderately slender, somewhat convex, very highly polished throughout, deep black, the elytra sometimes partially rufescent; erect hairs very short, sparse, sharply pointed; head evenly convex, deeply and densely punctate, rapidly declivous anteriorly to the strongly reflexed and broadly sinuate clypeus, which is finely, feebly and sparsely punctulate; prothorax convex, declivo-impressed basally, without an impressed median line, the punctures moderate in size, sparse, deeply impressed, with a large lateral space more or less impunctate; apical angles noduliform, the cavities not extending outward;

scutellum with numerous small and some larger shallow foveolæ; elytra elongate, nearly one-half longer than wide, very feebly narrowed from the slightly prominent humeri, the external apical angles very broadly rounded; surface not in the least bilineate, but with the very small flat areolæ at the bottoms of coarse, sparse and deeply impressed punctures, in a manner differing from any other species, rendering the general surface decidedly rugose; punctures on the flanks of the same nature but much smaller; pygidium evenly convex, with deep sparse moderate punctures; two teeth of the anterior tibiæ well developed, the hind tarsi strongly compressed but long, slender on the edge, as long as the tibiæ. Length 10.0–10.8 mm.; width 4.2–4.7 mm. Kansas and Nebraska.....**nitens** Lec.

Posterior angles of the prothorax not or but very slightly retracted, though well differentiated from the general surface by an oblique impression; anterior tibiæ always bidentate as usual.....10

Posterior angles small, slightly projecting from the lateral part of the base, but not defined by an oblique impression; body generally of larger size, with more even, less depressed and more feebly sculptured elytra, the hind tarsi notably short, strongly compressed and compact as a rule. Southern California and neighboring parts of Arizona..22

10—Smooth hind angles notably large in size and reflexed.....11

Smooth hind angles small in size and not reflexed in plane.....19

11—Clypeus carinate medially. Body oblong, parallel, deep black, feebly shining, the legs and under surface polished; erect pubescence sparse, fulvo-cinereous and only moderately long; head strongly, densely punctate, the punctures polygonally crowded, the surface flat, rather abruptly declivous anteriorly along a horizontally angulate line, the steep slope finely, feebly punctulate, the clypeus strongly reflexed, sinuato-truncate, barely as wide as the head, the carina fine but distinct, entire; mentum concave, evenly rounded, without trace of lateral sinus, the entire posterior edge forming an even angle with straight sides; prothorax large, two-fifths wider than long, with evenly rounded, anteriorly slightly more converging, sides, the apical cavities not at all tending to lateral extension; hind angles bordered internally by a small deep basal sinus, the base truncate; surface subevenly and feebly convex, with coarse, close-set, feebly impressed flat areolæ, coarser and polygonally crowded toward the sides, each bearing a very coarse short erect hair; scutellum with numerous large rounded areolæ; elytra more than two-fifths longer than wide, just visibly narrowed from the base and a fourth wider than the prothorax, the humeri scarcely at all prominent laterally, the apical angles broadly rounded; surface very depressed and flat on the disk, abruptly nearly vertical at the sides along a feebly tumid line, the areolæ rather close-set, large, flat, oval, shallow, very opaque black and, though only feebly impressed, thus giving a coarsely cribrate effect, the punctures coarse, deep and crowded at the sides; pygidium opaque, shining at apex, coarsely variolate; two anterior tibial teeth well developed, the hind tarsi strongly compressed, three-fourths as long as the tibiæ, the joints not impressed basally on their

outer faces; hind femora with very sparse larger and small punctures. Length 10.7 mm.; width 5.1 mm. California (Pasadena),—Fenyes..... **cribripennis** n. sp.

Clypeus without distinct medial carina, though sometimes vestigially carinulate..... 12

12—Upper surface with very long erect hairs, which are not very coarse but conspicuous as in *crenatus*. Body deep black, dull above, shining beneath; elytra having numerous fine, transversely sinuous or broken short lines of white or yellowish tomentum throughout the surface, with a very large and conspicuous patch at the base of each elytron; head feebly convex, with dense coarse crowded punctures, becoming fine and close at base, not very abruptly declivous anteriorly, the clypeus strongly reflexed, broadly sinuate medially, finely, asperately punctulate laterally; mentum deeply concave and as in the preceding; prothorax as in *angularis* throughout but less transverse, the coarse punctures deeper, the lobes of the apical angles longer and the large shining hind angles more reflexed, the hairs much longer and less coarse; scutellum with numerous coarse opaque foveolæ; elytra evidently shorter than in *angularis*, two-fifths longer than wide, subparallel, the humeri and angles as in the preceding; surface much less flattened on the disk, the upper part of the flanks joining the discal part in a broadly convex, even and wholly non-tumid line; areolæ large, broadly oval, not very close-set, flat, of a densely opaque black and rather deeply sunken, giving a strongly cribrate appearance, wholly unlike that of *angularis* but somewhat as in *cribripennis*, the sculpture of the flanks differing hardly at all from that of the disk, a character observable also in *angularis* and *maritimus;* pygidium transversely oval, convex, with sparse opaque black areolæ; anterior tibiæ with the two teeth large, long and acute; hind tarsi compressed, evidently shorter than the tibiæ. Length 10.5–12.8 mm.; width 4.6–5.65 mm. Oregon (Corvallis, Dilley and Forest Grove); northern California—Horn; Vancouver—Walker. [*Crem. pilosicollis* Horn] **armatus** Walk.

Upper surface with the sparse erect hairs in no case at all long and always inconspicuous..... 13

13—Hind tarsi compressed but unusually long, fully as long as the tibiæ; elytral foveolæ rounded, entire, rather deeply impressed and conspicuous, giving a cribrate appearance. Body deep black, feebly shining above, polished beneath; head with strong opaque confluent punctures, smaller and discrete at base, feebly convex, not abruptly declivous anteriorly to the strongly reflexed truncate clypeus, the punctures of the front descending the slope in not much reduced form; sides of the upper surface above the eyes abruptly defined; prothorax large, nearly as in *angularis* but with the coarse close-set areolæ more impressed and with a very much deeper sinus at base just within each of the large shining hind angles, the latter therefore more nodiform, the impunctate basal margin narrower; scutellum with dense deep foveolæ, wanting along the sides; elytra less flattened on the disk than in *angularis*, the transition to the flanks being through a more broadly convex surface, subparallel, two-fifths longer than

wide, only a fifth or sixth wider than the prothorax, rarely having each a small broken transverse spot of tomentum at the side behind the middle; pygidium moderately convex, with rather large close-set deep opaque areolæ of circular to polygonal outline; sterna, femora and sides of the abdomen with coarse deep opaque foveolæ, densely crowded on the met-episterna, the sparse erect hairs extremely short; two anterior tibial teeth acute and well developed. Length 11.4–13.0 mm.; width 5.2–6.0 mm. California (San Francisco). Abundant..... **maritimus** n. sp.

Hind tarsi much shorter than the tibiæ in both sexes, generally distinctly and sometimes very strongly compressed..... 14

14—Pronotum peculiarly sculptured, the punctures large, shallow, very densely opaque and extremely densely crowded, those of the head of the same character but not so coarse; each puncture has the minute puncture at its apex, bearing the erect hair, very distinct. Body rather elongate, black, the elytra slightly, the under surface strongly, shining; erect hairs extremely small, very coarse and fulvous; head nearly flat above, rather abruptly declivous anteriorly, the upper limit of the slope slightly and very obtusely tumid laterally; clypeus very strongly reflexed, as wide as the head as usual; prothorax fully one-half wider than long, the sides parallel, subevenly and strongly arcuate from the extreme basal to the apical tips of the angles, rather more converging apically than basally, the apical angles unusually oblique along the cavities, the basal acute at tip but much thickened, the outer aspect being rather broadly convex; transversely, they are separated from the median parts of the base, which is punctureless as usual, by a rather deep, evenly rounded sinus; scutellum with very shallow areolæ, the median line finely callous posteriorly; elytra very feebly cuneiform, one-half longer than wide, rather more than a fourth wider than the prothorax, very flat and with large, elongate-oval and very shallow opaque areolæ on the disk, rather abruptly vertical and more strongly and closely but less coarsely punctate at the sides; pygidium with large, very opaque and dense areolæ, smooth and sparsely punctulate at apex; hind tarsi two-thirds as long as the tibiæ, only moderately compressed and scarcely at all tapering, the last joint nearly one-half longer than the fourth. Length 12.0 mm.; width 5.4 mm. California (Humboldt Co.). A single example..... **densicollis** n. sp.

Pronotum with better defined, more discrete and generally deeper punctuation as in *angularis*..... 15

15—Pronotum with a broad oblique area at each side, from near the apical angles to each side at base, in which the punctures are nearly wanting and coarser than those of the remainder of the surface; elytra with larger and smaller foveolæ intermingled. Body rather narrow, deep black, slightly shining above, polished beneath; erect hairs very small, sparse, coarse; head with dense larger and smaller punctures intermingled, flat above, the apical slope rather abrupt, its upper limit only feebly tumid at the sides however, the very strongly reflexed clypeus broadly sinuate medially; prothorax scarcely one-half wider than long, the parallel sides only feebly

arcuate, straighter and rather more oblique along the outer side of the large basal angles, the apical angles as in the preceding; surface rather depressed, sometimes with a very obsolete median impressed line, the punctures generally not very coarse, close-set except as above stated; scutellum with coarse, dense, extremely shallow areolæ; elytra a fourth wider than the prothorax, moderately elongate, with very broadly rounded apical angles, the humeri rather small and slightly prominent laterally; surface not quite flat and not very abruptly descending at the sides, the opaque areolæ only moderate to small in size, rather elongate and well separated, more even on the broader elytra of the female; pygidium strongly convex, with large rounded flat opaque areolæ, which are well separated and slightly impressed, the apical part polished and sparsely punctulate as usual; hind tarsi two-thirds as long as the tibiæ, only moderately compressed and slightly though evidently tapering, the last joint nearly one-half longer than the fourth, the bidentate anterior tibiæ as usual in the *angularis* section. Length 10.5–11.2 mm.; width 4.7–5.1 mm. Washington State (Pullman),—W. M. Mann. Found in the nests of a large pale brown ant, having the abdomen inflated and dark piceous in color..... **obliquus** n. sp.

Pronotum evenly punctate; elytral areolæ subeven in size..... 16

16—Hind tarsi evidently tapering, strongly compressed and about two-thirds to nearly three-fourths as long as the tibiæ, but not compact in structure and with the second joint always distinctly longer than wide..... 17

Hind tarsi very short, though more than half as long as the tibiæ, strongly tapering, extremely compressed and rather compact, the second joint scarcely as long as wide..... 18

17—Hind tarsi moderately slender, somewhat tapering on the flat side, strongly compressed, two-thirds as long as the tibiæ and with the joints much less elongate than in *armatus*, the second only a fourth longer than wide; body narrower and slightly more elongate than in *armatus*, similar in color, but with shorter erect hair; head and clypeus similar, the latter rather less abruptly but strongly reflexed; prothorax broader, fully one-half wider than long, the parallel sides more evenly arcuate, widest at about the middle, the surface and apical and basal angles nearly similar; scutellum almost similar but with the foveolæ less coarse and usually a little deeper; elytra distinctly more elongate, rather more than one-half longer than wide, subparallel or very feebly cuneiform, the surface almost as in *armatus* but with the somewhat flatter disk more abruptly declivous at the sides, the foveolæ similar but not quite so large, usually close-set, smaller, deep and well separated to rather dense along the sides; pygidium dull, with large opaque areolæ, becoming shining and sparsely punctulate apically; anterior tibiæ and moderately variolate under surface nearly similar; elytra with small irregular tomentose spots and one more conspicuous and transverse at the sides behind the middle as usual in this section, the spots generally visible only when the surface is free from exuded grease. Length 10.0–12.0 mm.; width 4.6–5.2 mm. California (Placer—the type locality,—El

Dorado, Shasta and Del Norte Cos.) and Oregon (Josephine Co.). Many examples; that from Josephine Co. is more coarsely and densely sculptured than those from the Sierras and has a slightly different appearance but identical tarsi.....**montanus** n. sp.

Hind tarsi nearly as in *montanus*, the body a little larger in size and with a less transverse, laterally less rounded prothorax, which is relatively narrower when compared with the elytra, the latter nearly similar but not so narrow and differing especially in having the opaque areolæ more separated, rather narrower and extremely shallow, not at all impressed, gradually smaller and shorter but still very shallow on the flanks; pygidium nearly similar but with the areolæ extremely shallow and smaller in size; anterior tibiæ with the two teeth short, obtuse and rectilinearly truncated, evenly and equally so on each of the four anterior tibiæ of the two examples, the apical tooth less prominent than the others; hind tarsi partially broken in the types but with the first three joints almost exactly as in *montanus*, the second joint a fourth longer than wide. Length 11.5–12.2 mm.; width 5.0–5.3 mm. Washington State. Two specimens.

congener n. sp.

18—Body larger and stouter than in any other of this section, excepting *maritimus*, and differing very radically from that in its very short compact tarsi; color deep black, dull above, polished beneath, the erect hairs sparse, rather short and not conspicuous; elytra with some small and more or less transverse spots of tomentum, principally along the sides and a larger, more yellowish patch at base as in *armatus;* head not quite flat above, the punctures rather coarse, opaque and very densely crowded, the anterior slope not sharply defined at the summit, the clypeus very strongly reflexed; prothorax not quite one-half wider than long, parallel, with moderately and evenly rounded sides from apex to base, widest at about the middle, the basal angles large, convex, smooth, slightly reflexed, separated by a distinct oblique impression from the disk and, from the base, by a moderately deep sinus; punctures coarse but shallow, opaque and close-set, densely crowded and rather coarser at the sides; anterior angles defined internally by the usual cavities but not quite so long as in some of the allied species; scutellum with a very variable number of coarse opaque areolæ; elytra fully one-half longer than wide, subparallel, a fifth wider than the prothorax, flat and sometimes with traces of the two or three broad shallow lines of *knochi* on the disk, the opaque areolæ very shallow, narrow and elongate, widely separated and open behind, the flanks rather rapidly declivous and subprominently defined, with smaller and deep punctures; pygidium with large shallow opaque areolæ, shining and sparsely punctulate apically as usual; hind tarsi very rapidly tapering on the flat side and barely three-fifths as long as the tibiæ, without sexual differences so far as observable. Length 11.8–13.2 mm.; width 5.6–6.0 mm. California (Alameda and Contra Costa Cos.). Sacramento—LeConte. Not very common. Five examples.

angularis Lec.

Body smaller and more slender than in *angularis* but similar in coloration,

lustre and sculpture, the elytra with similar small lateral and larger basal tomentose areas and the erect hairs sparse and rather short; head differing in being more flattened above, this surface feebly tumid along the middle and broadly, just visibly impressed at each side, the punctures smaller, deeper and, though confusedly dense, more discrete than in *angularis;* anterior slope rather abrupt, its upper limit evident, though not at all sharply marked, the clypeus strongly reflexed and broadly, deeply sinuate anteriorly; prothorax narrower, only two-fifths wider than long, parallel, evenly and strongly arcuate at the sides, widest at the middle, rather more convex than in *angularis*, feebly impressed along the middle, the punctures nearly similar, but not so coarse and rather deeper, the angles nearly similar; scutellum with large areolæ, almost smooth apically; elytra nearly as in *angularis* but narrower; pygidium evenly and strongly convex, with the usual coarse and very shallow areolæ; hind tarsi but little more than half as long as the tibiæ, extremely compressed and tapering on the flat side, which, on the second joint, is twice as wide as thick. Length 11.3–11.7 mm.; width 5.2–5.6 mm. California (Kaweah),—Hopping. Two examples.

compressipes n. sp.

19—Legs rufous, rather long, posterior spiracles more conspicuously prominent than in any other species. Body elongate, subrhombiform, strongly depressed, black, moderately shining above, more so beneath, the sparse erect hairs rather long but less so than in *armatus*, *pugetanus* or *crinitus* and much less conspicuous; head obscure rufous anteriorly, opaculate, the punctures small and well separated; upper surface nearly flat, distinctly impressed at each side over the antennæ, the steep anterior slope rather abruptly defined in a transversely arcuate line, which is broadly, feebly tumid; clypeus rather wider than the head as in *crinitus*, very strongly reflexed; prothorax fully one-half wider than long, rather depressed, feebly impressed along the median line, slightly widest just behind the middle, the sides feebly arcuate; foveolæ rather coarse and deep but widely separated; scutellum with numerous moderate, very shallow areolæ; elytra very flat, distinctly cuneiform, a third to two-fifths wider than the prothorax and nearly three-fifths longer than wide; disk with broad and feebly impressed longitudinal lines as in *knochi*, the areolæ numerous, large, very elongate-oval, closed behind, not impressed and densely opaque, the flanks abruptly descending but with the upper line not tumid, deeply punctured, having each a small spot of tomentum behind the middle; pygidium with coarse impressed foveolæ; two anterior tibial teeth well developed; hind tarsi rather slender, not tapering, moderately compressed and four-fifths as long as the tibiæ; under surface with well separated coarse foveolæ throughout, less coarse on the abdomen as usual. Length 10.8–13.3 mm.; width 4.8–5.9 mm. Arizona (Santa Rita and Huachuca Mts.).

mexicanus Schaum

Legs black; posterior spiracles moderately prominent.....20

20—Clypeus rather conspicuously expanded but obtuse laterally and somewhat wider than the head across the eyes, nearly as in *mexicanus*.

Body oblong, very depressed, black, opaculate above, shining beneath; erect hairs of the upper surface rather sparse but very long and conspicuous, cinereous, about a fifth as long as the width of the prothorax, rather easily broken or removed; head opaculate, with rather small, deep and close but discrete punctures, flat above, deeply impressed at each side over the antennæ, the anterior slope steep and abrupt, its upper line well defined, the surface slightly prominent longitudinally at the middle but not on the very strongly reflexed clypeus; prothorax depressed, one-half wider than long, widest perhaps somewhat behind the middle, the sides feebly arcuate, slightly sinuate at the hind angles; surface distinctly impressed along the median line, having coarse, moderately deep, well separated punctures; basal smooth angles very moderate, the oblique line separating them from the general surface scarcely at all impressed or otherwise traceable, except by contrast of lustre; elytra scarcely one-half longer than wide, very feebly cuneiform, only a fourth or fifth wider than the prothorax, the disk very flat, with the longitudinal impressed lines of *knochi*, the areolæ opaque, moderate in size, broadly oval, not dense, very shallow and completely closed behind or entire in outline; flanks abruptly descending but without tumid upper line, coarsely, deeply and densely punctate; pygidium convex and with the usual areolæ; hind tarsi compressed but not tapering, three-fourths as long as the tibiæ. Length 10.8–12.0 mm.; width 4.5–5.2 mm. New Mexico (Magdalena) and Texas. Four examples..... **crinitus** Lec.

Clypeus no wider than the front, strongly reflexed as usual.....21

21—Body somewhat as in *crinitus* and strongly depressed but a little larger and stouter, deep black, rather more shining above than in *crinitus*, the sparse erect hairs almost similar, not quite so long but conspicuous, longer and shorter intermingled and easily lost or broken; head not so flat above, with stronger, deeper, very close-set punctures and but very slightly impressed at the sides, the anterior slope very steep, rather abruptly but not prominently delimited along a transversely arcuate, strongly convex line, which is much less abruptly defined than in *knochi;* prothorax nearly similar in form, somewhat convex, feebly impressed along the median line, generally widest evidently behind the middle and with coarse, rather deep and well separated punctures; basal angles rather more depressed below the general surface than in *crinitus;* scutellum with few areolæ; elytra subparallel, broader than in the preceding, a third to fourth wider than the prothorax, much longer than wide, the longitudinal impressed lines very feeble and indefinite, the disk nearly flat, the opaque areolæ and abruptly deflexed, punctate flanks nearly as in the preceding; opaque pygidium with well separated areolæ, polished and sparsely punctulate apically; hind tarsi nearly similar. Length 9.7–13.0 mm.; width 4.2–5.7 mm. Washington State, Idaho (Coeur d'Alene) and Utah. Abundant..... **pugetanus** n. sp.

Body smaller, narrower and less depressed, black or piceous-black, slightly shining above, more so beneath, the sparse erect hairs always very small and inconspicuous; head strongly flattened above, with

rather small, deep and narrowly separated punctures, the flattened area obliquely impressed at each side within the tumid margins, which continue distinct arcuately across the front at the summit of the steep declivity, the clypeus strongly reflexed, sometimes with trace of a faint median carina; prothorax evidently less than one-half wider than long, rather convex, feebly impressed along the median line, parallel, widest at about the middle, the sides strongly rounded, feebly sinuate just before the basal angles, which are small, tumid and abruptly below the general level; punctures rather coarse, moderately deep, well separated, coarser and crowded near the sides; elytra fully one-half longer than wide, only a fourth or fifth wider than the prothorax, feebly convex, with a few evident broad, feebly impressed, longitudinal lines, the areolæ not impressed, opaque, entire, moderate in size, elongate-oval and well separated, the flanks not very abruptly descending and with small, slightly deeper and distinctly separated punctures; pygidium convex, with widely separated and rather small shallow areolæ, generally even but with vestiges of a median carina in one example from Colorado; anterior tibiæ with the two teeth large and thick, sometimes with a swelling above the upper tooth, suggesting a feeble and very obtuse third tooth; hind tarsi two-thirds as long as the tibiæ, compressed, the second and third joints on the flat side not quite one-half longer than wide. Length 9.8–11.8 mm.; width 4.3–5.2 mm. New Mexico, Kansas (Manhattan), Colorado (Fort Collins), Manitoba (Aweme), and eastward to Illinois and Wisconsin. Common. [*Crem. crenicollis* Westw.]..... **knochi** Lec.

A—Similar but rather smaller, the sparse hairs excessively minute; head similar but with the punctures still finer, becoming sparse toward the well defined summit of the anterior slope, the oblique lateral impressions as in *knochi;* prothorax nearly similar, except that the punctures are smaller, shallower and sparser; anterior angles similar, smaller than in the other species; elytra similar, except that the areolæ are smaller, sparser and tend more nearly to aggregation in three broad lines on each elytron; pygidium very convex, with small sparse areolæ; anterior tibiæ more slender, without trace of an upper external swelling; hind tarsi longer, three-fourths as long as the tibiæ, very slender, the second and third joints on the wider side fully twice as long as wide. Length 10.2 mm.; width 4.3 mm. Kansas (Wheeler, Cheyenne Co.). One example..... **gracilipes** n. subsp.

B—Similar to *knochi* but shorter, the hind tarsi as in that species, the anterior tibiæ nearly similar but without trace of external swelling above the teeth; head similar but with the upper surface broadly impressed in transverse oval, which gradually becomes more impressed laterally, the punctures becoming shallow, ill-defined, with scabriculate surface in these large lateral impressions, the summit of the steep declivity more narrowly and sharply tumid than in any other species; prothorax similar but with the punctures very shallow and variolate; elytra much shorter, barely over two-fifths longer than wide, otherwise nearly as in *knochi,* except that the

areolæ are larger and closer, sometimes confluent, entire. Length 10.5 mm.; width 4.7 mm. A single example, without indication of locality, from the Levette collection; this specimen is uniformly dark red-brown in color throughout, possibly from immaturity.

areolatus n. subsp.

22—Prothorax widest at or slightly behind the middle; pronotal punctures not coarser medially; erect hairs always setiform.....23

Prothorax widest at the hind angles, which are not at all retracted, the pronotal punctures coarser medially, the coarse erect hairs there becoming squamiform.....27

23—Anterior tibiæ bidentate as usual, the teeth very obtuse, sometimes worn completely off in old examples.....24

Anterior tibiæ slender, distinctly tridentate externally, the upper tooth more than half as long as the next and equally well defined.....26

24—Anterior tibiæ very short and broad, less than twice as long as wide, the two external teeth large, triangular; basal thoracic angles very small, feeble and obtuse, projecting about midway on the broadly arcuate edge joining the transversely truncate median part of the base with the sides at slightly behind basal third. Body elongate and rather narrow, very evenly, feebly convex above, the sides of the elytra broadly convex, becoming gradually steeply declivous to the lateral edge, deep black throughout, rather dull above, shining beneath, the upper surface without trace of erect hairs, the parapleura with short sparse stiff hairs; head densely, not coarsely punctate, feebly convex, very gradually declivous anteriorly, slightly tumid along the middle of the slope, the clypeus strongly reflexed, punctulate throughout; prothorax less than one-half wider than long, widest near basal third or fourth, the sides thence slightly converging and broadly, evenly arcuate to the apex of the apical processes, the latter well defined by the internal deep cavities, which have a tuft of fulvous hairs, borne from the inner side of the process; surface feebly convex, broadly and feebly impressed along the middle; punctures close, moderate and rather shallow, crescentiform laterally, smaller and densely crowded apically and along the feeble median impression; scutellum with small crescentic punctures, wanting broadly toward the sides; elytra fully three-fifths longer than wide, parallel and not wider than the prothorax, the punctures numerous, rather deep and in the form of acute incised angles or ovals, widely open behind, smaller, rounded and shallow on the flanks; pygidium evenly convex, very densely and rather strongly punctulato-reticulate; legs short and very strongly compressed, broad on the flat side, the hind tarsi rather slender, not very compressed and rather more than half as long as the tibiæ. Length 13.8 mm.; width 5.35 mm. Arizona,—G. W. Dunn.....**tibialis** n. sp.

Anterior tibiæ less dilated and longer, always more than twice as long as wide, the two teeth never sharply defined and sometimes completely worn away; basal thoracic angles larger, sharp and right or less, more lateral than in *tibialis*, never abruptly retracted.....25

25—Body stout and massive, large in size, oblong, subparallel, black, the upper surface opaque, the lower shining; erect hairs rather long,

fulvous and conspicuous, abundant on the pronotum; head feebly convex, with rather small, dense punctures, the anterior slope long, rather gradual, the upper part somewhat tumid medially, the clypeal apex abruptly and strongly reflexed; prothorax large, fully one-half wider than long, evenly and feebly convex, widest at or slightly behind the middle, the sides rather strongly arcuate, the apical processes narrow, moderate in length, the cavities deep, with pubescent tuft as in the preceding; punctures rather coarse, close, still coarser and crowded laterally; elytra subparallel but with rather large subprominent humeri, fully one-half longer than wide and a fifth wider than the prothorax, the disk nearly even, not quite flat, rather abruptly declivous laterally, the flanks vertical; areolæ not impressed, well separated, very elongate and narrow, generally sharply pointed and always open behind, shorter, close, more punctiform but shallow on the flanks; surface with numerous small spots of white tomentum, usually transversely arranged; pygidium closely but not very coarsely, shallowly areolate; legs strongly compressed, the hind femora and tibiæ closely, coarsely asperate on the broad flat sides, the hind tarsi only slightly compressed but very compact, rapidly tapering and shorter than in any other species, being less than half as long as the tibiæ. Length 13.0–15.0 mm.; width 5.9–6.6 mm. Southern California. Abundant. [*Crem. crassipes* Westw.] **schaumi** Lec.

Body not quite so stout but otherwise very similar to that of *schaumi* in color, lustre and sculpture, the erect hairs, however, very short and inconspicuous, easily lost; head almost exactly similar throughout; prothorax not so short, distinctly less than one-half wider than long, widest evidently behind the middle, the sides broadly, very evenly arcuate, gradually converging anteriorly, the apical and basal angles similar, the punctures dense, rather coarse but notably shallow; scutellum similar and with numerous foveolæ, the apex finely carinate; elytra almost exactly as in *schaumi*, except that the humeri are laterally less prominent, the small tomentose spots wanting and the very shallow narrow elongate and apically acute areolæ much denser; pygidium evenly and strongly convex, with small and rather close-set, very shallow rounded areolæ; femora and tibiæ strongly compressed but not quite so wide as in *schaumi*, with the flat surfaces not acutely asperulate but with obliquely waving, feebly ruguliform sculpture, the hind tarsi differing greatly, not so compact, more slender, less tapering, similarly moderately compressed but fully two-thirds as long as the tibiæ. Length 12.2–14.0 mm.; width 5.2–6.0 mm. Southern California (Freeman). [*Cremastschaumi* Westw. nec Lec.] . . . . . **westwoodi** Horn

26—Form rather slender, much smaller than the preceding species, black, slightly shining above, more so beneath, the erect hairs coarse, rather short but very distinct, fulvous in color; head as in the two preceding species, having small dense punctures, but with the median line of the anterior slope slightly tumid to the base of the abruptly and strongly reflexed clypeal apex; prothorax two-fifths wider than long, with the sides subevenly, rather strongly arcuate, widest at or

just behind the middle, the apical processes shorter and more slender, the adjoining cavities more gradually shallowing internally than in either of the preceding species, the basal angles as in *schaumi;* punctures shallow, variolate, close-set, generally tending to unite longitudinally, forming a peculiar rugulosity, coarse and somewhat irregularly confluent toward the sides; surface evenly and feebly convex, not evidently impressed along the middle, the close sculpture extending to the basal margin; scutellum shorter than usual, with feeble areolæ, carinulate apically; elytra rather shining, without tomentose spots, fully one-half longer than wide, a fifth wider than the prothorax, subparallel, the humeri rather prominent laterally; surface subeven, not quite flat, rather gradually flexed downward at the sides, with close-set, elongate, posteriorly open areolæ, the side lines of which are unusually deeply incised, the punctures of the flanks small, rounded, shallow and rather close; pygidium very convex, with the usual small shallow areolæ; legs rather slender, the femora evidently compressed, the tibiæ slender and scarcely at all compressed, feebly and irregularly but closely punctato-rugulose; hind tarsi slender, not tapering, distinctly compressed, three-fourths as long as the tibiæ. Length 10.8–11.4 mm.; width 4.5–4.9 mm, Southern California. Two specimens..... **tridens** n. sp.

27—Form moderately slender, somewhat as in *westwoodi*, the pygidium more coarsely punctate, the tibiæ less stout, the front tarsi shorter and the mentum more deeply concave, black, subopaque above and with short, very sparse brownish erect hairs, which become, medially on the pronotum, distinctly squamiform and from two to three times as long as wide; mentum concave, with entire margins; head as in *schaumi;* prothorax nearly one-half wider than long, widest across the the hind angles, which are not at all retracted, the sides very broadly and just visibly sinuate before them, arcuately narrowed anteriorly, the apex three-fifths as wide as the base; apical angles with the usual attendant cavity, the hind angles right, triangularly smooth above and not defined by an impressed line; surface broadly convex, the median line impressed, the punctures coarse and shallow, dense at the sides, well separated and coarser toward the middle; elytra moderately flattened, rather more so than in *westwoodi*, the sculpture as in that species; pygidium coarsely cribrate; under surface coarsely, moderately closely punctate; tibiæ distinctly less broad than in *westwoodi;* front tarsi short, the intermediate subequal in length to the tibiæ, the posterior a little shorter than the tibiæ; all the tarsal joints are concavely compressed, more strongly so basally, so that when viewed from above they appear much narrower at base and in a very peculiar manner. Length 12.5–14.0 mm.; width 5.0–5.8 mm. Arizona (Fort Mojave, on the Colorado River). Three examples, **quadratus** Fall

There appears to be scarcely any doubt that *lecontei*, *walshi*, *junior*, *crenicollis* and *crassipes* of Westwood, are the same as *castaneæ*, *retractus*, *squamulosus*, *knochi* and *schaumi* respectively,

and I think there can be no doubt that *percheroni* and *cicatricosus* of Westwood, as defined and figured by the author, are the same as *variolosus*, but there may be some question as to whether or not there may be several species closely allied to the latter. I do not think, for instance, that figure 7, on plate 14 of the "Thesaurus," representing Westwood's conception of *variolosus* and figure 9, of the same plate, representing *cicatricosus* Westw., could have been taken from individuals of the same species, unless drawn with extreme carelessness. Again the small notch of the mentum is well formed and distinct, though circularly rounded, in Westwood's specimens as figured, while in my North Carolina examples of *variolosus*, described above, the notch is subobsolete and there is barely a vestige of it—so feeble, in fact, that if it were not known that *variolosus* possessed a small notch in that particular position on the limb of the mentum, it would never be noticed. It is quite possible that the feeble clypeal carina of *cribripennis*, defined above, may be to a great extent an adventitious character in the single type example, and the species would never have been founded upon that feature alone; it is abundantly distinct in other ways, as for example in the tumid upper limits of the elytral flanks, coarse sculpture, very depressed surface and in other characters. In one of my examples of *westwoodi* there is a very singular mutilation. Just before each of the hind angles of the prothorax there is a large deep acute notch, with its anterior outline transverse to its inner angulation and from there outward evenly and sinuously oblique; the posterior part of the true thoracic angles therefore projects obliquely in a thin process. This is evidently caused by a part of the edge, just before the angles, being chipped out, possibly while in an immature state by the mandibles of ants, and would not be mentioned here were it not for the fact that the notch is exactly similar on both sides; it is the almost complete bilateral symmetry that is so remarkable. *Pugetanus*, described above, was assumed to be a larger flatter form of *knochi* by Horn, but is a very distinct species, more closely allied to *crinitus*, by reason of habitus and the very long erect hairs seen in perfect specimens.*

* As indicating that the habits of the species of this genus are not always intimately associated with ants, the following statement of Mr. Knaus, referring to *nitens*, is interesting:

"*Cremastocheilus nitens* is found almost every season during the hottest part of the

Trinodia n. gen.

The longitudinal division of the pronotum into three lobes by deep impressions of the surface, is a character the generic significance of which admits of scarcely any doubt; this, and the unusually parallel form of the body, gives to *Cremastocheilus saucius* Lec., and a number of allied species, a general habitus conspicuously distinguishing them from *Cremastocheilus*, as represented by the numerous foregoing species. This trilobate external feature must inevitably signify an arrangement of the internal organs of the prothorax correspondingly aberrant when compared with *Cremastocheilus*. The species are rather numerous, though less so than in the preceding genus, and those already discovered are assignable to two well marked subgeneric groups as follows:

Pronotal impressions continuing from base to apex; hind angles deeply emarginate externally, the apical angles very aberrant in structure. having an external cavity delimiting a sometimes retracted slender oblique lobe; clypeus not dilated at the sides and having a very high and conspicuous median carina, longitudinally crossing the concavity; anterior tibiæ slender, the two teeth widely separated. . . . Group I

Pronotal impressions extending from base to scarcely beyond the middle, the basal angles broad, convex, separated from the base by the usual deep sinus and not modified externally, the apical angles as in *Cremastocheilus* but projecting anteriorly and not inwardly oblique; clypeus strongly dilated laterally, not carinate; anterior tibiæ as in *Cremastocheiles*, broad, the two teeth much more approximate as usual in that genus. . . . . Group II

The mentum in the first group, or *Trinodia* proper, is deeply concave to flat, in the latter case with reflexed hind margins; this is a conspicuous difference and is almost undoubtedly of a sexual nature; the plate is more or less sinuate at each side and, at the hind margin, it is entire, sometimes slightly produced medially. In the second group, now represented by *Cremastocheilus wheeleri* alone, the mentum is very different; it is more transverse, deeply concave, having each side prolonged and lobiform and the hind margin is broadly bisinuate and transverse, a form of mentum

day, flying rarely over the sand dunes, but more commonly found early in the morning buried in the sand under sticks or other objects. They are not difficult to capture in the cooler part of the day, but during the warmer parts they must be picked up quickly when they alight on the sand, or a net thrown over them, as they sit quietly only a short time after alighting before they again take flight." (Bull. Bk. Ent. Soc., X, p. 39.)

which, like that of the clypeus, differs from anything else known in the tribe.

In all the numerous African types the clypeus is entirely different from that of our genera, being nearly flat, subquadrate and very feebly or scarcely at all reflexed at tip, more nearly as in *Euphoria*, and the mentum assumes very diversified forms, being sometimes small or, as in *Scaptobius*, very large, generally flat, sometimes deeply sinuate at apex as in *Macroma*, or entire as is usual. It is probable, in fact, that structural peculiarities are more varied and radical in this tribe than in any other of the Cetoniinæ.

Group I.

Subgenus **Trinodia** in sp.

The species of this subgenus frequently have a pale testaceous coloration, quite unlike anything known in *Cremastocheilus* in this respect, and the integuments are strongly shining and feebly sculptured as a rule above as well as beneath; those known thus far are the following:

Anterior tibiæ slender, subpedunculate basally, the inner margin rather abruptly constricted behind about the middle, the upper of the two external teeth at about the middle of the length. Body rather small, parallel, slightly convex, shining, clear testaceous throughout, the erect hairs rather long but sparse and easily broken or removed; head evenly convex, finely but not densely punctate, the anterior slope steep but gradually formed, the clypeus strongly reflexed, the middle of the reflexed margin connected with the middle of the front at the beginning of the slope by a very high thin and conspicuous carina; sides of the clypeus, first antennal joint and the very prominent ocular canthus having many long coarse bristles; prothorax nearly three-fifths wider than the median length, the sides subparallel and feebly arcuate, slightly widest anteriorly, the lateral sections strongly convex, moderately punctured, smooth basally, the median less convex section moderately convex, distinctly impressed along the middle and with numerous moderate punctures bearing bristling setæ; scutellum very finely attenuate at apex, variably punctulate; elytra three-fifths longer than wide, subequal in width to the prothorax, parallel, rounded at apex; surface depressed on the disk, broadly convex and then steeply declivous at the sides, having, discally, very slender narrow shallow unimpressed areolæ, moderately close-set and not so opaque as in the preceding genus, the punctures at the sides small, rounded, not deep and well separated; pygidium large, strongly convex, evenly and very finely, rather densely punctato-scabriculate; legs slender; hind tarsi scarcely at all

compressed, filiform and two-thirds as long as the tibiæ, the small external tooth at the middle of the latter more developed than usual. Length 9.7–10.5 mm.; width 3.8–4.6 mm. Kansas and Colorado. Five examples. [*Crem. saucius* Lec.]..... **saucia** Lec.

Anterior tibiæ moderately slender but not subpedunculate basally, the inner outline continuous and without constriction from apex to base; upper external tooth situated well beyond the middle, the teeth much less widely separated than in *saucia*.....2

Anterior tibiæ, as well as all the femora and tibiæ, notably broad and compressed.....5

2—Hind angles of the prothorax rather long, slender and everted. Body very small in size, piceous, slightly shining; head coarsely, not densely punctured, the occipital region transversely depressed; clypeus, viewed from above, nearly semicircular, the margin widely reflexed, at middle very strongly carinate, the surface smooth; prothorax wider than long, narrower behind, the sides arcuate in front, sinuate posteriorly, the hind angles acute and prolonged externally; anterior angles with a deep incisure, forming in front an auriculate lobe, the surface trilobed, very coarsely but sparsely punctate, the median section somewhat depressed; elytra with the disk flat, the sides nearly vertical, the discal region with shallow elongate foveæ, the sides with coarse punctures; pygidium coarsely, sparsely punctured; under surface shining, with very coarse but sparse punctures; legs brownish; anterior tibiæ obtusely bidentate apically; middle and hind tibiæ acutely dentate near the middle; tarsi cylindrical, slightly compressed and but little shorter than the tibiæ. Length 7.5 mm. Texas. [*Crem. spinifer* Horn]..... **spinifer** Horn

Hind angles of the prothorax acute and projecting posteriorly.....3

3—Upper surface opaque; elytral punctures scratch-like. Body oblong, black, the dorsum very flat; clypeus strongly carinate at the middle; pronotum sharply divided into three regions; anterior angles auriculate, the posterior spiniform, the sides arcuate, sinuately narrowing to the hind angles, the base sinuate within the angles; surface coarsely punctured, the outer sections more coarsely and closely, the central part more sparsely and more opaque; elytra flat, with punctures in the form of elongate scratches on the disk, but decidedly punctiform at the sides; under surface shining, with coarse sparse punctures; legs slender; mentum entire. Length 11 mm. Lower California (Pescadero). [*Crem. opaculus* Horn]..... **opacula** Horn

Upper surface shining and as in *saucia*, the hind angles of the prothorax also as in that species, acute, projecting posteriorly and bordered externally by a deep emargination, which encloses a dense tuft of fulvous setæ.....4

4—Body slender, parallel, feebly convex, shining and clear testaceous in color and with rather long coarse fulvous hairs; head rather finely, closely punctate, the gradually formed anterior declivity beginning midway between base and the strongly reflexed apex, the median carina very strong but not attaining the upturned apex, the clypeus throughout, the basal antennal joint and the unusually prominent ocular canthus, bristling with coarse erect setæ; prothorax fully

one-half wider than long, strongly trilobate, parallel and feebly arcuate at the sides, the punctures small, sparse externally, feeble but close-set and bearing longer bristling setæ on the median section, which is only feebly convex, much depressed below the lateral sections and with the median line very feebly impressed; scutellum with small sparse foveolæ; elytra nearly three-fifths longer than wide, barely at all wider than the prothorax, parallel, the humeri not laterally prominent but moderately so dorsally; disk somewhat impressed toward base suturally, convex laterally to the steep deep slopes; foveolæ nearly as in *saucia* but larger, the lateral punctures small, feeble and well separated; pygidium very convex, with small foveolæ and in part scabriculate, having sparse, very minute hairs as in *saucia;* legs slender; external tooth of the hind tibiæ beyond the middle and obsolescent, barely traceable; hind tarsi slender, rather short. Length 11.5 mm.; width 4.7 mm. Kansas (Clark Co., elevation 1962 feet),—F. H. Snow..... **setosifrons** n. sp.

Body less slender, larger in size, parallel, black throughout; erect setæ bristling and rather long, fulvous as usual; head as in the preceding but still more convex, almost tumidulous and with a large oval punctureless spot on the occipital slope, not suggested in *setosifrons*, also with the anterior carina not attaining the strongly reflexed apex and obsolete posteriorly at a long distance from the foot of the anterior slope, and not almost attaining the latter as in the preceding species; bristling setæ nearly similar, the eye-canthus even more prominent and acute; prothorax less transverse, not quite one-half wider than long, parallel, evenly and very feebly arcuate at the sides, the lobe of the apical angles similarly much retracted; surface almost similarly trilobed and punctate; elytra about as wide as the prothorax, three-fifths longer than wide, in all respects nearly as in *setosifrons* and similarly impressed suturally toward the scutellum, but with the foveolæ still narrower, more elongate and decidedly denser, also deeper; propygidium with transverse wavy incised lines; pygidium large, strongly convex, differing greatly from that of any of the preceding species in having concentric sculpture of short fine irregular incised lines and with a few small foveolæ basally, the hairs sparse and very minute; anterior tibiæ as in *setosifrons*, the upper tooth, at apical third, slender; hind tibiæ with barely a vestige of an external cariniform protuberance well beyond the middle; hind femora strongly compressed, four times as wide as the tibiæ, somewhat as in the preceding. Length 12.3 mm.; width 5.2 mm. Texas (Waco). A single example..... **quadricollis** n. sp.

5—Form stout, piceous in color, feebly shining, the legs reddish-brown; punctures all bearing short erect black hairs; head coarsely, not densely punctate, the occipital region transversely depressed; clypeus semicircular, the margin widely reflexed and fimbriate with short hairs, strongly carinate at the middle, the surface smooth; prothorax transverse, narrower behind, the sides slightly arcuate in front, oblique behind, the hind angles acute, smooth and shining, the anterior deeply incised, forming an auriculate lobe; disk trilobed, the median section much the widest and depressed; surface with rather

close-set variolate foveæ, densely placed near the side margin; disk of the elytra flat, with very elongate foveæ, the sides nearly vertical and with coarse variolate punctures; pygidium with coarse variolate punctures; under surface coarsely, sparsely punctured; legs broad and flat, sparsely punctured on the under side, smooth above; anterior tibiæ bidentate apically, the middle and posterior with the outer edge acutely bidentate near the tip; tarsi cylindric, slightly compressed, shorter than the tibiæ. Length 13 mm. Arizona. [*Crem. planipes* Horn] ..... **planipes** Horn

Three of the above species, *opacula*, *spinifer* and *planipes* of Horn, are unknown to me and the descriptions here given are derived directly from the originals; there is probably some kind of an emargination outside of the acute hind angles of *spinifer*, analogous to that so well developed in *saucia*, *quadricollis* and *setosifrons*, but no such abrupt sinus is indicated in the published descriptions. All the species are very rare, excepting *saucia*, and even that is not over abundant in collections.

Group II.

Subgenus **Anatrinodia** nov.

Although apparently intermediate between the preceding species and *Cremastocheilus* in many respects, and with curtailed pronotal sulci, there are so many peculiar characters pertaining to the unique type of this group, such as the remarkable abdominal structure, that it evidently should be considered as at least subgeneric in value. The hind angles of the prothorax seem at first to be very different from those of *saucia* and more nearly as in the *angularis* section of *Cremastocheilus*, there being a very slight oblique impression delimiting them from the lateral sections of the surface, but on viewing these angles from the sides obliquely below, the emargination filled with fulvous setæ is observable, though wholly concealed from above. The type may be described as follows:

Body oblong, parallel, black, in great part opaque above and still more opaque beneath; sparse yellowish hairs of the upper surface very moderate in length, numerous on the abdomen and on the sterna medially; head large, feebly biimpressed on the upper surface and with small sparse punctures, the sides over the antennæ slightly prominent; eye-canthus not prominent as it is in the preceding group, anterior slope shallow and gradually formed, the clypeus much wider than the head, truncate, slightly reflexed medially and broadly deplanate and obtusely angulate at the sides; prothorax two-fifths

wider than long, the sides just visibly converging from base to apex and slightly sinuate at the middle, the exterior of the apical angles continuing the lateral outline and bearing internally, on the oblique surface, a dense mass of fulvous setæ; base transverse, without sinuses adjoining the basal angles; surface medially depressed basally, feebly impressed along the middle and with small shallow punctures, the punctures laterally smaller, very sparse, wanting toward the apical and basal angles; elytra oblong, parallel, not quite one-half longer than wide, obtusely rounded at apex, fully a fifth wider than the prothorax, the subapical umbones small and prominent, the humeri not prominent, the callus polished; surface flat, with elongate-oval, shallow, rather widely separated and very opaque areolæ, convex and then very declivous at the sides, where the punctures are fine and very sparse; pygidium moderately convex, with small sparse shallow areolæ and feebly subcarinate along the middle; abdomen very opaque, not coarsely, rather closely punctured and with short yellowish plumose hairs, closely placed throughout, the apices of all the segments bearing a dense even spongiose fringe; legs polished, black, smooth, with very fine sparse punctures, rather compressed, the hind tibiæ but little narrower than the femora and with a small spiculiform tooth externally beyond the middle, the hind tarsi three-fourths as long as the tibiæ and strongly compressed; anterior tibiæ rather broad, bidentate apically. Length 10.7–11.1 mm.; width 4.7–4.9 mm. Nebraska and Colorado. [*Crem. wheeleri* Lec.]. . **wheeleri** Lec.

This is the most isolated species in this part of the series and the extraordinary abdominal modifications are not suggested, even vestigially, in any other known to me. It does not seem to be abundant and my series consists of but four examples; these are remarkably uniform in size, as is the case also among the individuals of *saucia* and probably all others of this genus.

Tribe TRICHIINI.

The chief distinguishing character of this tribe is the absence of the post-humeral sinus at the sides of the elytra, constituting so constant a feature in all the preceding Cetoniids; the mes-epimera are sometimes indistinct from a dorsal viewpoint, but in *Osmoderma*, are as conspicuous as in most of the subfamily. The species are small and floricolous as a rule, most of them with very elongate slender tarsi, but the genera *Inca* and *Osmoderma* are composed of species much larger in size and of less active habits. We have within our faunal limits the following six genera, most of the characters being as stated by Lacordaire:

Hind coxæ contiguous; basal joint of the hind tarsi moderately elongate. 2

Hind coxæ very remotely separated; basal joint of the hind tarsi relatively very much elongated.....7

2—External maxillary lobe corneous, transversely trigonal; body large in size; scutellum elongate, triangular and apically attenuate. **Osmoderma**

External maxillary lobe coriaceous and lamelliform; scutellum smaller, ogival or rounded; body of small or moderate size.....3

3—Elytra longer than wide, glabrous; anterior tibiæ bidentate in both sexes.....4

Elytra short, never distinctly longer than wide.....5

4—Antennæ 10-jointed as usual; mentum very large, with a broad deep apical sinus; hind tarsi much longer than the tibiæ; upper surface glabrous throughout, the elytra shining and often metallic. Europe. [Type *Scarab. variabilis* Linn.].....***Gnorimus**

Antennæ 10-jointed, the mentum and tarsi as in *Gnorimus;* head and pronotum pubescent as in *Trichius;* elytra flatter, opaque, pale, with black spots. [Type *Cetonia maculosa* Knoch].....**Gnorimella**

Antennæ 9-jointed; mentum narrower, similarly flat but with a small deep anterior sinus; hind tarsi subequal in length to the tibiæ, very much shorter than in either of the preceding genera; body small, the pronotum shining, with an impressed figure romewhat as in *Trigonopeltastes;* elytra glabrous, opaque, with black and rufous coloration. [Type *R. floridana* Csy.].....**Roplisa**

5—Anterior tibiæ bidentate (♂), tridentate (♀); upper surface glabrous and opaque almost throughout, the pronotum generally with a reversed deltoid figure on a dark ground, the elytra pale, with black maculation; hind tarsi very much longer than the tibiæ. [Type *Scarab. delta* Forst.].....**Trigonopeltastes**

Anterior tibiæ bidentate in both sexes; upper surface in great part pubescent; hind tarsi similarly very long, not so long and generally more slender in the female.....6

6—Elytra quadrate, parallel, the sides barely swollen basally, the side margins reflexed, not thickened, the surface generally opaque, with black fasciæ, without cretaceous spots. Europe. [Type *Scarab. fasciatus* Linn.].....***Trichius**

Elytra more cuneiform, generally distinctly swollen at the sides basally, the lateral edges not reflexed but thickened, the surface shining and with transverse cretaceous spots at the sides, wanting in a few species. [Type *Trichius piger* Fabr.].....**Trichiotinus**

7—Body small to very small in size, oblong, flat above, more or less squamose, the anterior tibiæ slender, linear, 5-dentate externally, the middle tooth the longest; apex of the pygidium (♀) in some species prolonged obliquely in a long slender spiniform process. [Type *Scarab. hemipterus* Linn.].....**Valgus**

The European genera *Gnorimus* Serv., and *Trichius* Fabr., are only introduced for comparison, as our American species so named are not congeneric. *Valgus* constitutes in reality a distinct tribal group, as properly recognized in the European catalogue of Heyden,

Reitter and Weise, but is here left in the position assigned it by Lacordaire merely for convenience. In all of these genera the species are peculiarly prone to develop local varieties or subspecific forms, which adds greatly to the difficulty of taxonomic study.

Osmoderma Serville.

The species of this genus are rather numerous in North America but thus far only one has been discovered in the palæarctic regions; in the neotropics the genus is replaced by the still larger species of *Inca*. The body is rather depressed in form, the sculpture in most cases very coarse and rough and the movements rather slow and heavy; they are however strong fliers. As in all the other genera of this tribe, the delimitation of species and subspecies among the numerous individuals in most collections, is not altogether satisfying, but insofar as can be determined at present, the forms worthy of names before me are as follows, all the characters being recorded from the male, except when the contrary is stated:*

Dorsal surface roughly and coarsely sculptured; pronotum having two median and two lateral short ridges.....2

Dorsal surface smooth or with the sculpture comparatively fine and sparse throughout; pronotum modified in an entirely different way as described below.....5

2—Cavity of the head gradually sloping upward toward base.....3

Cavity abruptly limited behind by a steep wall.....4

3—Body small in size and rather slender, the apical thoracic angles very acute, the sides near them distinctly sinuate. Body elongate, depressed, piceous-black, the elytra obscure rufous, the pronotum with distinct green metallic lustre, the elytra with similar though feebler lustre; head nearly flat between the high supra-antennal prominences, not sloping upward at all behind, having very shallow sculpture of interlacing wavy arcuate lines and extremely minute punctulation; base with coarse discrete punctures; clypeus two-fifths wider than long, with very feeble sparse interlacing lines and annuli, the reflexed apex not medially sinuate; prothorax a third wider than long, the four short subanterior ridges very well developed; sides obtusely prominent at the middle, converging and very feebly sinuate thence to the base and more converging and sinuate to the apex; punctures rather coarse and deep, close-set anteriorly and laterally, elsewhere very sparse; scutellum with a few fine punctures;

* I am glad to note that in my contention for the use of the feminine gender in words of this kind, I am upheld by the decision of Burmeister. That author arrived at his determination to consider the word *Osmoderma* feminine, and not neuter, through philological reasoning, while my action was based rather upon the desirability of preserving nomenclatorial consistency.

elytra a third longer than wide, nearly one-half wider than the prothorax, parallel and broadly arcuate at the sides, the sculpture as in *scabra* but feebler and less dense; pygidium strongly convex, with sparse fine feeble crescentiform punctures, each bearing a very minute hair, the sculpture minutely, feebly, transversely rugulose basally; legs long as usual; hind tarsi short, barely two-thirds as long as the tibiæ. Length (♂) 18.0 mm.; width 8.3 mm. Maine (Paris),—Frost..... **delicatula** n. sp.

Body larger and stouter, the apical thoracic angles blunt at tip, the oblique sides apically not or only very feebly sinuate, the sinus not extending to the tips of the angles as it does in the preceding. Body very depressed, the elytra nearly flat on the disk, blackish-piceous to paler, the upper surface only moderately shining due to the strong dense sculpture and having an obscure cupreous lustre; head concave between the strong supra-antennal prominences and with irregular fine annuli, close-set though leaving some vacant areas, the base very coarsely, deeply, confluently punctate; antennal club longer, less stout and much less evenly oval than in the preceding; clypeus more deeply concave, the ridge separating it from the vertex much more pronounced, the surface with irregular confluent feeble annuli; reflexed clypeal edge not sinuate medially; prothorax nearly two-fifths wider than long, the sides very prominent at or just before the middle, thence oblique and subsinuate to straight to the base; anterior ridges moderately developed, the general surface but slightly convex, the punctures coarse, deep, very dense and confluent, except basally, where they are separated by from once to twice their own diameters; scutellum longer, with more numerous and coarser punctures, impressed along the median line as usual; elytra oblong, slightly more than a fourth longer than wide, about a third wider than the prothorax, the sides parallel and arcuate; surface with coarse strong anastomosing vermiculate rugæ, among which several coarse longitudinal excavated striiform lines can be observed, especially inwardly; hollows between the rugæ with small feeble annuli; propygidium with fine, extremely dense punctiform sculpture, bearing very minute dense hairs, the apical margin abruptly smooth; pygidium convex, with moderately close-set, strong but not coarse, crescentiform punctures, the basal margin impressed, very densely and minutely rugulose and opaque; legs long, stouter than in the preceding, the posterior tibiæ with two external spines, the anterior with the usual three strong sharp triangular subequal and nearly equidistant teeth; hind tarsi not quite two-thirds as long as the tibiæ. Length (4 ♂) 19.8–20.8 mm.; width 10.0–10.4 mm. New York (Peekskill and Staten Island) and Maryland. [*Trichius scaber* Beauv.; *Gymnodus foveatus* Kirby]..... **scabra** Beauv.

A—Similar to the preceding but with the pronotum distinctly more convex, the anterior ridges stronger, especially the two median, the punctures of the pronotum less coarse, close but scarcely confluent anteriorly and, posteriorly, becoming much sparser toward the middle; cavities of the head and clypeus with the fine feeble confluent annuli much denser; antennal club more oval; elytra nearly

similar but not quite so flat on the disk and with the similar rugiform sculpture rather less strongly developed; pygidium larger, strongly convex, the rather sparse feeble crescentiform punctures distinctly smaller, the base not impressed or opaque; propygidium with the hind margin much more gradually becoming smooth; legs long but still stouter; tarsi a little longer. Length (4 ♂) 19.7–22.7 mm.; width 10.0–11.5 mm. Pennsylvania (Inglenook) and New York (Wingdale) ..... **rugosa** n. subsp.

B—Female much smaller and narrower than the female of *scabra* or *rugosa* and of brighter bronze lustre, the elytra rufescent; surface shining; head nearly as in *scabra* (♀) but with longer and more slender palpi; prothorax as in the female of *rugosa* but smaller and flatter; elytra narrower, nearly similar in sculpture, two-fifths longer than wide, nearly one-half wider than the prothorax and almost three times as long; scutellum unusually narrow, one-half longer than wide; pygidium more finely and feebly scabriculate than in either *scabra* or *rugosa* and with an area at apex smoother and with more widely isolated punctures; legs rather more slender. Length (♀) 19.5 mm.; width 8.8 mm. Wisconsin (Cedar Lake). A single example. . **gracilipes** n. subsp.

4—Form stout, depressed above, piceous-black, feebly æneous beneath, strongly cupreous above and shining; head larger than in *scabra*, very deeply concave, the concavity with very fine irregularly interlacing lines and rather small scattered deep and conspicuous punctures, not connected with the general sculpture, the base closely, strongly punctate; clypeus three-fifths wider than long, very deeply concave, the transverse line between it and the vertex high and strong, the sculpture nearly like that of the vertex but somewhat stronger and with the punctures not evident; apex very strongly reflexed, feebly sinuate at the middle; prothorax large, barely a fourth wider than long, the sides subangularly prominent distinctly before the middle, thence oblique and nearly straight to the narrowly rounded obtuse basal angles, oblique and straight anteriorly, the angles blunt at tip; surface nearly as in *scabra* but rather more convex, with much stronger medial anterior prominences and a longer steep slope from their anterior ends to the apex; punctures moderately coarse, confluent on the elevations, close laterally, rather widely separated gradually toward base; scutellum large, long, with many punctures, canaliculate only in about apical half; elytra broad, only a fifth longer than wide, parallel, the sides only feebly arcuate, the apex very broadly, obtusely rounded, two-fifths wider than the prothorax, the sculpture nearly as in *scabra* but more finely comminuted; pygidium large, very transverse, convex, with small sparse punctures, becoming gradually larger, dense and finally confused basally, the surface along the base deeply impressed and opaque; legs rather long as in the other species, the hind tarsi more than two-thirds as long as the tibiæ, somewhat thick but equal throughout and moniliform. Length (1 ♂) 25.0 mm.; width 13.0 mm. Southern shores of Lake Michigan..... **caviceps** n. sp.

A—Form nearly similar but shorter, the coloration darker and less

metallic; head not quite so large, the vertex and clypeus nearly as deeply concave, the vertex with fine. irregularly contiguous annuli, wanting along the middle and without evident intermingled punctures, the line between it and the clypeus somewhat less elevated than in *caviceps*, the clypeal apex broadly arcuate, its median sinus feeble; prothorax nearly similar but shorter and with the two median prominences more parallel and less diverging posteriorly, the sides much less angularly prominent before the middle, the sculpture nearly similar; scutellum as in *caviceps;* elytra oblong, a fourth longer than wide, a third wider than the prothorax, much less obtusely rounded behind but with nearly similar sculpture; pygidium nearly similar; hind tarsi rather shorter and less stout. Length (3 ♂) 19.0–23.0 mm.; width 9.5–12.3 mm. Locality nearly as in the preceding. . **lacustrina** n. subsp.

5—Male oblong or oblong-oval, rather depressed, rufo-piceous in color, the upper surface with more or less feeble metallic glint; head moderate, with prominent eyes, the vertex rather deeply concave, it and the clypeus with very close sculpture of fine interlacing lines and some small scattered punctures, the transverse line between them barely visibly tumescent; clypeus strongly reflexed and broadly rounded at apex; prothorax large, strongly convex, fully a third wider than long, the sides rather prominent before the middle, thence converging and arcuate to the apex and less oblique and straight to the obtuse but not rounded basal angles; surface with a large deep transverse concavity before the middle, with its anterior margin transversely prominent and cariniform except laterally, continued posteriorly for a short distance deeply, and almost to the base, more shallowly, by a medial impression; punctures in about anterior half rather strong and moderately close, crescentic and bearing coarse yellow hairs, becoming basally very fine sparse and nude; scutellum large, triangular, with scattered moderate punctures; elytra a fourth longer than wide, parallel, broadly arcuate at the sides and rounded at apex, two-fifths wider than the prothorax; surface feebly and subevenly convex, smooth, with fine sparse punctulation arranged in part linearly internally; a transverse incised line at each side from the suture just behind the scutellum is generally evident; pygidium large, evenly and strongly convex, with fine feeble sparse crescentic punctures arranged concentrically in a way wholly different from that of *scabra*, the surface not modified or impressed at base; legs moderately long; hind tarsi three-fourths as long as the tibiæ, moniliform; anterior tibiæ as in *scabra*. Length 25.8–29.2 mm.; width 13.3–15.0 mm. Eleven examples.

Female a little shorter and stouter than the male, similar in color and lustre; head a little smaller, with notably less prominent eyes, the upper surface flat, coarsely and densely punctato-rugose, excepting a small, transversely arcuate subbasal space, which is smooth; clypeus not reflexed at tip and broadly rounded; antennæ as in the male, thick, with a small oval club; prothorax relatively smaller, less transverse, hexagonal, moderately convex, with a transverse deep impression before the middle, which is smaller and not so deep

as in the male and not continued posteriorly along the median line, the transverse prominence at its anterior margin not quite so pronounced, the punctuation almost similar but a little coarser, the hairs less developed; elytra a fifth to sixth longer than wide, more rounded at the sides, almost similarly sculptured but fully one-half wider than the prothorax; pygidium more triangular, much less convex, strongly, densely punctato-rugose and becoming gradually finely and irregularly umbilicato-lineate laterally and basally; hind tarsi scarcely two-thirds as long as the tibiæ, the anterior tibial teeth as in the male but somewhat stronger. Length 24.8–28.8 mm.; width 12.3–15.8 mm. Twelve examples.

New York and Virginia to Michigan, Wisconsin and Missouri. [*Cetonia eremicola* Knoch]..... **eremicola** Knoch

A—Female nearly as in the same sex of *eremicola* but less oval and more oblong, stout, feebly convex, deep black and shining, the elytra faintly picescent; head nearly similar but broader, the densely confluent sculpture rather less coarse; prothorax much larger and with the sides parallel from the obtuse and rounded basal angles to rather beyond the middle, there broadly rounding and oblique to the apex, fully a third wider than long, the punctures on the whole closer but entirely wanting in a large discal area at each side just behind the transverse fossa, which is shallower and more indefinite than in *eremicola*, the transverse carina however equally strong; elytra similar but with the parallel sides less arcuate, only about two-fifths wider than the prothorax, the sculpture nearly similar but with the surface more depressed, the posterior slope on the line extending obliquely from each subapical umbo to the suture very abrupt and sharply marked, in a way never observable in *eremicola;* scutellum broader, almost as wide as long; pygidium broader, more uniformly and strongly rugulose but in a nearly similar manner; hind tarsi stout and evidently shorter. Length 28.5 mm.; width 15.5 mm. Missouri (St. Louis). A single example..... **subplanata** n. subsp.

The two primary subdivisions of this genus, as defined above, are almost of subgeneric value, the structure of the pronotum being radically different, though that of the remainder of the body, as well as the nature of the sexual modifications, is nearly identical. The European *eremita* Linn., belongs to the *scabra* section and was redescribed by G. H. Horn, from some accidentally imported European specimens, under the name *socialis* (Trans. Am. Ent. Soc., 1871, p. 338); as the species has not been rediscovered here, it is scarcely worth while to refer to it in any further detail than to say that it is much larger than any of our species of the *scabra* section, being even larger than *eremicola*, and the sculpture of the elytra is less coarse and not so rough. No species of the *eremicola*

section has yet occurred in the palæarctic faunal regions. Besides considerable variability within specific or subspecific limits, some parts of the body seem to be peculiarly subject to accidental deformation in this genus. In the type of *lacustrina*, for example, the funicle of the right antenna is much shortened and thickened and the club reduced to less than half its usual size and thickness, and, in one example of *rugosa*, the reflexed clypeal edge is very irregular. The tarsi in *Osmoderma*, because of their even thickness, nearly glabrous surface, suboval joints, with the basal joint short and unmodified, remind us forcibly of those of *Dynastes*, though they are relatively smaller in size. Lacordaire must have overlooked this genus when he wrote that one of the chief distinguishing characters of the Trichiini is the dorsal invisibility of the mesepimera.

The female in the *scabra* section is generally somewhat darker in color or less metallic than the male and sometimes a little larger in size, with still coarser sculpture, the head flattened above, densely punctato-rugose and with unreflexed clypeal apex, the eyes not smaller than in the male, as they are in *eremicola*, and the prothorax is relatively somewhat smaller than in the male. Of *scabra*, I have two females, one from the District of Columbia; the elytra are quadrate, not longer than wide and much shorter than in the male and the pronotum is very closely and coarsely sculptured almost throughout. Of *rugosa* I have seen about a dozen females, some of which are apparently from Wisconsin, the elytra are longer than wide, though broader than in the male, and the pronotum is more loosely sculptured than in *scabra*, especially toward base; as usual, the dorsal ridges so developed in the male are very faint or vestigial. Just which is typical *scabra*, the form indicated above, or that described as *rugosa*, it is impossible to decide, but the form selected best fits the name. Of *lacustrina* I have a single female, which greatly resembles that of *rugosa*, except that the prothorax is relatively larger and broader; it is from Illinois. Of *gracilipes* the single female before me is smaller, less stout and has a much smaller prothorax than in any of the allied forms; it may prove to be a true species. Nothing is now known to me of the female of the very distinct and interesting *delicatula*.

Gnorimella n. gen.

The type of this genus has always figured in our lists as a species of *Gnorimus*, but on comparing it with the European *Gnorimus variabilis* and *nobilis* of Linné, no close affinity can be discovered; the American *maculosa* has an absolutely different habitus and that it forms a different genus admits of no doubt whatever. In intimating that, in the opinion of the authors (Class. Col. N. A., p. 263), *Gnorimus* might very well be united with *Trichius*, they could not possibly have even seen the European species, either of *Gnorimus* or *Trichius*, for, while it might be plausible to assume that a close relationship exists between *maculosa* and *Trichius*, although the resemblance is closer with the true *Trichius* of Europe than the American forms here generically separated, the idea of associating *Gnorimus variabilis* with *Trichius* would be preposterous. A fuller realization of the differences involved can, in the absence of careful figures, best be gained by a full description; the principal characters of the type of *Gnorimella* are as follows:

Form somewhat ventricose, feebly convex above, black, rather shining, the elytra opaque and pale yellowish-brown, with numerous black spots, generally having a triserial arrangement on each, the subapical spot the largest, the basal and sutural region free from maculation, excepting the humeral umbo, which is always black and polished, the base, scutellum and fine sutural ridge also shining; head, pronotum and sterna with long, dense and conspicuous yellowish pubescence, the elytra glabrous; head rather finely, very densely punctate, the clypeus sparsely, with the apex strongly reflexed and deeply, medially sinuate (♂), or scarcely at all reflexed and with a shallower sinus (♀); vertex sometimes with a narrow median line of yellowish tomentum; antennal club as long as the stem, shorter in the female; prothorax trapezoidal, two-fifths wider than long, widest near basal third, the sides arcuate, becoming oblique and straight anteriorly from behind the middle; apex truncate, three-fifths as wide as the base, which is broadly and strongly lobed; surface with deep, moderate, very close-set punctures, even in distribution but obsolete in the spots of tomentum, which are variable in development, there being four forming a subbasal square, one median and anterior and about four toward the sides, of which the anterior and posterior are the largest, all the lateral spots often obsolete; scutellum semicircular, densely punctate, smooth peripherally, except at base, and generally with a large central spot of tomentum subobliterating the punctures; elytra slightly longer than wide, subparallel, the sides feebly arcuate, straighter and feebly converging behind the middle, each broadly arcuate at apex, one-half wider than the prothorax; punctures fine, sparse, confused suturally, in several series medially

and subserial on the flanks, without tomentum of any kind; pygidium large, transversely oval, solidly tomentose, excepting a transverse, finely scabriculate black area at apex, which is sometimes prolonged anteriorly at each side of the median line; parapleura and the side of each abdominal segment partially tomentose; legs slender, the anterior tibiæ bidentate in both sexes; hind tarsi slender, a fourth longer than the tibiæ (♂), scarcely longer than the latter and rather more slender (♀). Length 11.2–13.8 mm.; width 6.2–7.9 mm. Pennsylvania, Virginia and westward to Indiana. Twelve examples. [*Cetonia maculosa* Knoch, *Trichius bigsbyi* Kirby and *Gnorimus dissimilis* G. & P.].....**maculosa** Knoch

The names hitherto given this species serve to indicate its aberrant nature. It is moderately abundant at times but I know nothing regarding its habits, except the statement of Burmeister that it occurs about *Rubus* blossoms.

Roplisa Csy.

This genus is intermediate in some respects between the *Gnorimella* and *Trigonopeltastes* types, having the elongate elytra of the former and the deltoid pronotal marking and irregularly maculate elytral surface of the latter, but in other respects, as for example the 9-jointed antennæ and short tarsi, it is widely distinct from either of them. The type is one of the smallest members of the Trichiini, excepting *Valgus*, and it may be described as follows:

Body narrow, oblong-oval, rather convex, piceous, with the legs and abdomen testaceous, the head and pronotum shining black, the clypeus often rufescent, the pronotum with a widely open V-shaped impressed line of yellow tomentum, interrupted at the suture and sometimes partially closed anteriorly by a fine transverse line of similar nature, tending thus to reproduce the marking of *Trigonopeltastes*, the margins throughout the periphery, more broadly near the hind angles, also with dense yellowish tomentum; elytra opaque, rufous, the sides broadly from before the middle, the apex and the suture broadly in more than apical half, black, the markings often nubilous; on the flanks there are sometimes two small and rounded spots of tomentum, the anterior the larger; scutellum partially, the suture in basal third, where it joints a transverse line extending to inner third, tomentose; upper surface glabrous, the lower with very small sparse hairs, which are still more minute on the pygidium; head irregularly punctato-rugose, the clypeus punctate medially, longitudinally rugose laterally, nearly as long as wide, parallel and rounded at the sides, thickened, broadly, feebly arcuate, with rounded angles and feebly, medially sinuate, at apex; prothorax but little wider than long, parallel and feebly arcuate at the sides to fully apical third, where the

sides become sinuately oblique to the apex; base broadly, strongly lobed, deeply grooved along the apex of the lobe; median line more or less feebly impressed; punctures small and remote; elytra longer than wide, subparallel and broadly arcuate at the sides, only very little wider than the prothorax, finely, in great part obsoletely, punctulate, with a few fine incised longitudinal lines inwardly, the edges posteriorly with some fine, sharp, transverse rugulosity; pygidium rather longer than wide, convex, shining, tumid near the lower rounded edge and with bioblique and rather coarse incised wavy lines, tomentose laterally and more or less along the base; legs moderate; hind tarsi barely longer than the tibiæ; sterna and sides of the abdomen, except posteriorly, with large areas of tomentum, disintegrated by the incised linear sculpture. Length 6.8–8.2 mm.; width 3.25–4.2 mm. Florida. Two examples. . **floridana** Csy.

Individuals of this species seem to be rare and I do not know the sex of the two at hand, although it might be inferred that they are males; the antennal club is notably small, much shorter than the stem.

Trigonopeltastes Burm.

Although at present suppressed in our lists, this is an amply valid genus, the sexual differences in the anterior tibiæ being very pronounced, which character is reinforced by the general habitus of the body, this being very different from that of *Trichiotinus* because of the opaque elytra, peculiarly maculate with black, and the reversed delta-like triangle of tomentum on the pronotum, which seems to be a rather constant and characteristic feature of the genus, though sometimes imperfect and lacking the transverse bar as in the preceding genus, from which *Trigonopeltastes* differs in its 10-jointed antennæ and very long tarsi. The species are numerous in Mexico, but we have only one so far as discovered as follows:

Body slightly ventricose, feebly convex and densely opaque throughout above and on the head, the pygidium, except at apex, and the entire under surface, with exception of the median part (♀), or a small median reflexed spot at the apical margin of the fourth ventral segment (♂), covered with an extremely dense crust of pale yellow tomentum; head deep black, the clypeus as long as wide, shorter in the female, parallel, rounded at the sides, testaceous, black mediobasally, with a spot of yellow tomentum at base near each side (♂), the apex bilobed; front with a transverse bar of tomentum, the surface from this bar to the clypeal apex with minute hairs, which are wanting behind it; at base, there is more or less tomentum toward the sides; vertex velvety-opaque and sculptureless (♂), or less dull and

with fine close rugiform sculpture (♀); antennal club slender, as long as the stem, shorter in the female; prothorax large, fully a fourth wider than long, opaque velvety-black, the entire periphery with yellow tomentum, the discal reversed delta discontinuous posteriorly at the middle; sides parallel and feebly arcuate to beyond the middle, there becoming oblique to the obtuse and rounded angles, the apex sinuate; base broadly lobed; scutellum opaque, black, with two triangular spots of tomentum bearing minute hairs, like those of the pronotal tomentum; elytra about as long as wide, parallel and strongly arcuate at the sides, fully a fifth to nearly a third wider than the prothorax, glabrous, rufous in color, variegated with black, the principal dark spots being one oblique externally near the base, another triangular near the sides just behind the middle, also the apex, prolonged anteriorly near the suture for a short distance; punctures small, arranged in a few impressed series, the sutural interval basally having a narrow vitta of pale tomentum; pygidium with rather long, decumbent and somewhat dense golden hair, feebly convex, as long as wide (♀) to longer and narrower (♂); abdomen with the first four segments short, the fifth as long as the three or four preceding combined; hind femora swollen and peculiarly bent, the hind tarsi more than twice as long as the tibiæ (♂), or with the hind femora straight and unmodified and the tarsi three-fourths longer than the tibiæ (♀). Length 7.8 –10.0 mm.; width 4.5–5.6 mm. North Carolina to Florida, Louisiana and Texas. Twenty-seven examples. [*Scarab. delta* Forst.]..... **delta** Forst.

The complex ornamentation and striking sexual differences require a rather long description in order to be made known properly. There are some slight differences between the specimens from North Carolina and those from Florida and the Gulf coast, but further investigation in this direction is deferred. The male in *delta* is about three times as abundant as the female in the series at hand. *Trigonopeltastes* is more widely separated from *Trichiotinus* than might be inferred from the definition in the table, the structure of the abdomen, for instance, being radically different, and this distinguishes it also from *Roplisa*, where the abdomen is more normal, the fifth segment being barely as long as the two preceding combined. *Roplisa* is however very much closer to *Trigonopeltastes* and the European *Trichius*, than it is to *Trichiotinus*.

Trichiotinus n. gen.

Besides the obvious structural differences in the elytra and the much longer tarsi, the species of this genus can be distinguished at once from the European *Trichius* by their general habitus. The

elytra are shorter and more narrowed posteriorly than in *Trichius*, not opaque and glabrous throughout, but always shining and sparsely pubescent, generally but not always with an opaque spot at the sides between two transverse tomentose lines; these features are so constant as to constitute a generic character beyond much doubt, although I do not have before me all the forms presented by the species, subspecies and aberrations of the European genus. The genus *Trichiotinus* is very rich in taxonomic forms but is difficult to deal with from the standpoint of satisfactory classification, because of the uncertain systematic value of some of the units, but, so far as the abundant material at hand will admit, the following disposition of them seems at least plausible:

Elytra each with two rather strong convex costæ, the depressed flat intervals between them finely and very densely punctate.....2
Elytra with the costæ feeble or obsolete, the intermediate surfaces not very finely or relatively so densely punctate.....7
2—Pygidium with more or less conspicuous pubescence in both sexes, though always less developed in the male.....3
Pygidium with short and sparse hairs, denser in *intermedius*, sometimes almost bald.....4
3—Body moderately stout, black or piceous-black, the elytra nearly black to ferruginous, always with the flanks between and behind the lateral transverse tomentose lines, which do not extend inwardly further than the crest of the flanks, opaque and darker in color; head, prothorax and under surface with conspicuous yellowish-cinereous pubescence; head with rather large prominent eyes, the surface finely, closely punctate; clypeus not quite as long as wide, parallel, the apex broadly rounded, very gradually and barely visibly reflexed and feebly, medially sinuate, perfectly similar in the sexes; prothorax (♂) nearly as long as wide, the sides feebly converging to apical third, then oblique to the very feebly sinuate apex, or (♀) larger and broader, nearly a third wider than long; punctures fine and close in both sexes, the vestiture dense, the surface obtusely impressed along the median line and with a tomentose patch near each angle, often obsolete however; base finely and strongly beaded; scutellum rather narrow, longer than wide, finely, closely punctate and densely pubescent; elytra distinctly shorter than wide, widest near basal third; hairs not dense, short, longer and bristling near the suture; punctures outside of the two depressed vittæ fine and sparse; pygidium (♂) slightly wider than long, with very short hairs, longer on the pronounced subapical umbo, or (♀) much wider than long, rather less convex, with longer, denser hairs, not umbonate subapically, having in both sexes wavy transverse, acutely and minutely serrulate lines, less close in the male and with a large elongate tomentose area at each side, relatively smaller in the female and never extending across the base; hind tarsi very slender, almost twice as

long as the tibiæ, slightly shorter in the female; fifth ventral with a transverse fascia of pale tomentum, narrowly interrupted medially, much retracted in the female. Length (18 ♂, 10 ♀) 8.6–11.2 mm.; width 4.5–6.0 mm. Massachusetts to Wisconsin, Iowa, Louisiana and North Carolina. [*Trichius piger* Fabr., *drummondi* G. & P. and *rotundicollis* Kirby]..... **piger** Fabr.

Body a little larger and still stouter, deep black throughout, the elytra never paler even in part; head nearly as in *piger*, the eyes similarly prominent, the clypeal sinus rather deep; prothorax with plentiful pubescence and fine, very close-set punctures, in outline nearly as in the preceding in each sex, but rather less transverse in the female, very nearly as long as wide in the male, in which sex the large tomentose spot at each angle becomes almost obsolete; scutellum narrow, longer than wide, with the usual close punctures and long pubescence; elytra shorter than wide, especially in the female, the pubescence and general sculpture as in *piger*, each with a short dash of tomentum along the suture behind the scutellum and sometimes a few points in the first depressed interval, the lateral transverse bars long and unusually oblique, the posterior making an angle of about 20° with a transverse line and extending far inside the median axial line; pygidium (♂) slightly wider than long, strongly convex, with the hairs short and not very dense, or (♀) very large and transversely oval, feebly convex and with long, dense and very conspicuous pubescence, in both sexes with the usual close-set wavy serrulate lines and elongate lateral spot of tomentum; hind tarsi (♂) thick, nearly twice as long as the tibiæ, or (♀) less than one-half longer than the tibiæ and not so thick. Length (4 ♂, 4 ♀) 10.5–12.8 mm.; width 5.8–7.2 mm. Texas. [*Trichius texanus* Horn]..... **texanus** Horn

A—Nearly similar to *texanus* in color, lustre, sculpture and pubescence; male having the clypeus a little larger but similarly sinuate, the prothorax as in *texanus*, the scutellum rather different, being broader, in fact not much longer than wide; elytra similar and with the posterior of the two lateral transverse lines of white tomentum oblique, but the first depressed interval is densely and evenly tomentose from basal three-sevenths nearly to the apex; pygidium (♂) very much larger and broader than in the same sex of *texanus* and with the vestiture of whitish hairs longer and denser; hind tarsi similarly long but not so thick. Length (1 ♂), 11.0 mm.; width 6.0 mm. New Mexico (Cloudcroft—9000 feet elevation),—Knaus. **monticola** n. subsp.

4—Pygidium (♀) with rather dense, moderately long pubescence, becoming still longer and denser in a large rounded area near the apex. Body stout, rather large in size, black throughout as in *texanus*, head shorter and broader than in that species, the eyes somewhat larger, the clypeal sinus distinctly shallower, nearly as in *obesulus;* prothorax as in *texanus* and similar in outline, sculpture and vestiture, the punctures frequenty sparse in a large sublateral area near basal third, the tomentose spots smaller; scutellum and elytra as in *texanus*, except that the two transverse lateral bars of tomentum are equal in length, the posterior much shorter than in that species and

not extending within the crest of the flanks, and it is only very slightly oblique; pygidium (♀) much less transverse, only a third wider than long and with very much shorter pubescence, the lateral areas of tomentum large, the surface evenly and feebly convex, the strong wavy lines of sharp serriform crenulation very close-set as in the preceding species; antennal club notably long for the female, being nearly as long as the preceding six joints combined, somewhat as in *obesulus*, the fifth ventral as in *texanus*, not as long as the three preceding combined. Length (♀) 11.3–12.0 mm.; width 5.9–6.4 mm. Louisiana (Vowell's Mill). Three examples. . . . **intermedius** n. sp.

Pygidium (♂ ♀) almost completely nude, the hairs minute. 5

5—Body small, narrow, ovulate, moderately convex, black, the abdomen and legs rufous. Head and pronotum less shining than the elytra, finely and very closely punctured, obscure green in color and with close-set erect hairs; pygidium testaceous, the elytra more flavo-testaceous throughout, excepting an opaque dark brown lateral spot; head three-fifths as wide as the prothorax, the eyes moderate, the clypeus feebly sinuate medially at apex, the broadly rounded lobes slightly reflexed; prothorax but slightly wider than long, relatively large in size, the oblique sides in apical third sinuate; median line feebly impressed; cretaceous spots wanting; scutellum small, narrow, punctate; elytra much shorter than wide, of the usual outline, barely more than a third longer than the prothorax and two-fifths wider, sparsely punctate, densely and finely on the depressed intervals, the lateral tomentose fasciæ not crossing the summit of the flanks, which is unusually broadly and strongly costiform as in *rufobrunneus*, the costa more sharply defined and prominent than in *obesulus;* sutural margin with a dash of tomentum behind the scutellum; pygidium (♂) large, slightly wider than long, very convex, obtusely umbonate near the lower margin, tomentose at each side and with very minute hairs, which are rather close-set along very approximate, transversely wavy and finely, subasperately crenulate lines; hind tarsi very slender, two-thirds longer than the tibiæ. Length (♂) 8.5 mm.; width 4.4 mm. North Carolina (Southern Pines),—Manee.

reductus n. sp.

Body rather large in size, much stouter, moderately convex, the minute pygidial hairs of the male sparse, the wavy lines of sculpture very much less approximate. 6

6—Color pale red-brown throughout, the opaque areas at the sides of the elytra darker brown; head and pronotum finely, very closely punctate and pubescent, the erect hairs moderately long, on the elytra very short and erect but on the scutellum long and coarser than on any other part of the upper surface; head moderate, only a little more than half as wide as the prothorax, with the usual prominent eyes, the clypeal apex distinctly and rather abruptly reflexed, obtusely bilobed, the sinus feeble and shallow; prothorax relatively much smaller than in *reductus*, the sides more parallel, the apical obliquity nearly straight; median line broadly impressed; tomentose areas wanting; scutellum narrow, with rather prominent smooth margins; elytra slightly shorter than wide, inflated subbasally, fully two-fifths longer

and wider than the prothorax; punctures dense on the depressed intervals, elsewhere rather strong but sparse, wanting on the opaque lateral areas as usual, the post-scutellar lines of tomentum short, the lateral fine, equal, not crossing the summit of the flanks; pygidium (♂) but slightly wider than long, very convex, with long lateral tomentose areas never extending across the base, the surface strongly and acutely umbonate near the apex, the incised lines finely undulated, not asperulate, widely separated, the very minute hairs sparse, a little longer and closer toward the apex of the umbo; hind tarsi compressed, two-thirds longer than the tibiæ; anterior tibial teeth apical and small but very acute. Length 9.7–11.7 mm.; width 5.0–6.2 mm. Florida (Marion Co.). [*Trichius rufobrunneus* Csy.] Twelve specimens—all males and exhibiting no variation.

rufobrunneus Csy.

Color black, shining throughout, the abdomen feebly rufescent, the legs slightly greenish in lustre; head and pronotum black, rarely with faint greenish lustre; elytra black, the disk frequently more or less rufescent, sometimes only in the depressed intervals, the lateral opacity always black; pygidium piceous to rufescent; head and pronotum with small close punctures, frequently sparse toward the hind angles and finer and denser throughout in the male; head barely more than half as wide as the prothorax, the clypeal apex moderately reflexed and much more gradually than in the preceding, the median sinus very feeble and shallow, not comparing in any way with that of *texanus* or allied forms; prothorax large, transverse, a fifth (♂) to two-fifths (♀) wider than long, the angle at apical third very obtuse and rounded, the apical obliquity straight; median line broadly and feebly impressed; tomentose margins near the angles usually distinct in the female; scutellum and elytra formed as in the preceding and with similar sculpture, pubescence and tomentose areas; pygidium (♂) throughout nearly as in *rufobrunneus*, or (♀) larger, more transverse, evenly and less strongly convex but similar otherwise to that of the male, the hairs barely longer, closer or more visible, though closer toward tip. Length (1 ♂, 5 ♀) 9.3–11.8 mm.; width 4.9–6.4 mm. Florida (Jacksonville). Distinguishable readily from *rufobrunneus* by the different coloration and larger, more transverse prothorax in both sexes; the tarsi are not longer but more slender and less compressed in the male. [*Trichius obesulus* Csy.] . . . . . **obesulus** Csy.

7—Elytra with areas of opacity on the flanks as in the *piger* section preceding; pygidium (♀) rounded at apex, always pubescent, with a subapical flattened and more pubescent area 8

Elytra wholly devoid of opacity at the sides, the lateral tomentose spots less developed as a rule and sometimes completely wanting as in *bibens* 11

8—Body larger in size and stout 9

Body small in size and more slender 10

9—Color black, the elytra pale toward the suture; vestiture throughout long, herissate, cinereous and conspicuous, sparse on the elytra,

close and long on the pygidium; head and pronotum finely, very closely punctate, the vertex not modified as it is in *veridulus* and allied forms; clypeus moderately sinuate, the rounded lobes gradually and very feebly reflexed; prothorax convex, about as long as wide (♂), to a fourth wider than long (♀); hairs near the basal angles very long, forming a dense brush-like cluster, the surface with a little tomentum near the hind angles in the female; scutellum narrow, very densely punctured and with a dense brush of long hairs, the smooth margins extremely fine; elytra large, only a little shorter than wide, not much narrowed from near the base and very much wider than the prothorax in both sexes; fine striæ forming the double lines extremely approximate; surface nearly even, finely, sparsely punctate throughout; at each side there are two very long and obliquely transverse tomentose lines, the posterior extending sometimes almost to the suture and very much longer than it ever is in *affinis*, the second interval with a long line of tomentum as a rule; pygidium (♂) scarcely wider than long, convex, or (♀) much shorter and wider, not so convex and flattened apically as in the *viridulus* section, in both sexes having a large spot of tomentum at each side, the hairs long and very abundant; hind tarsi two-thirds longer than the tibiæ (♂), or less than one-half longer (♀); fifth ventral without a lateral line of tomentum. Length (♂ ♀) 9.0–11.0 mm.; width 4.8–5.4 mm. Wisconsin to Colorado. Very abundant. [*Trichius assimilis* Kirby and *bistriga* Newm.]..... **assimilis** Kirby

Color black, the head and prothorax with brighter, the elytra with more obscure, green metallic lustre; body stout, with the surface very shining; head and pronotum with the small punctures distinctly less dense than in *ventricosus*, the pubescence less abundant and not so conspicuous, nearly as in *assimilis*, the prothorax (♂) rather large and trapezoidal, the long erect fringe of hairs at the basal angles distinct; elytra in form nearly as in the preceding but with still finer and sparser punctures and very short sparse hairs, longer basally, where there is a short dash of tomentum along the suture; striæ of the double series not so approximate; surface not at all paler suturally, having at each side two coarse and slightly oblique, transverse rufescent lines, extending sometimes to inner third, the outer part, but only that on the steep flanks, tomentose, the line of tomentum on the second interval completely wanting; pygidium (♂) nearly as long as wide, convex, tomentose laterally, the crenulate incised lines not so densely placed as in the preceding, the hairs less conspicuous though moderately long; hind tarsi (♂) nearly twice as long as the tibiæ. Length (♂) 10.0 mm.; width 5.6 mm. Probably from the Lake regions. One example. [*Trichius viridans* Kirby and *mutabilis* Schaum]..... **viridans** Kirby

Color black, with dark green metallic lustre [throughout above and on the pygidium, the under surface and legs black, the latter with very feeble greenish lustre; surface very shining throughout, the pubescence long, gray, fine and abundant, sparser and shorter on the elytra, conspicuous on the under surface, legs, pygidium and prothorax, finer than in *viridans* and everywhere rather denser;

head nearly as in that species; prothorax relatively very much smaller and shorter but otherwise nearly similar; elytra relatively much more inflated, scarcely as long as wide, more swollen at the sides basally and fully two-thirds wider than the prothorax, the lateral two transverse dashes of tomentum smaller, not prolonged inwardly by pallid lines, the sculpture similar, except that the punctures are everywhere much coarser; pygidium and tarsi nearly similar. Length (♂) 9.2 mm.; width 5.0 mm. Michigan. A single example. . . . . **ventricosus** n. sp.

10—Body moderately ventricose, shining, black, the legs sometimes rufescent, the head and pronotum occasionally with greenish metallic lustre, the elytra largely testaceous, black laterally; pubescence moderate in length and density, not very conspicuous on the pygidium, except on the flattened apical part in the female; head and prothorax with the punctures small, dense on the former, well separated on the latter, the clypeal sinus rather deep; prothorax slightly (♂) or distinctly (♀) wider than long, sometimes with a little tomentum around the basal angles, the erect fringe moderately distinct; median line rather distinctly, sometimes rather sharply, impressed; scutellum with narrow smooth edges; elytra distinctly shorter than wide, rather swollen near basal third; surface nearly as in *viridans* but with the sparse punctures coarser, having at each side, but only on the dark flanks, two transverse tomentose lines, never penetrating within outer third and very different from the extremely extended oblique lines of *assimilis;* coloration apically pale and black in alternating vittæ; pygidium (♂) as in *viridans*, wider in the female and flattened and more densely pubescent apically; hind tarsi not quite twice as long as the tibiæ in the male. Length (♂ ♀) 8.0–9.3 mm.; width 4.25–5.2 mm. Rhode Island to Vermont, westward to Michigan and southward to North Carolina. Very abundant. [*Trichius affinis* G. & P. and *variabilis* Schaum]. . . . . **affinis** G. & P.

Body very narrow, still smaller in size, suboval, rather shining, black, with feeble æneous or viridi-æneous lustre, the elytra pale testaceous throughout, except the black humeri, the flanks with the two opaque areas darker brown; legs rufous; head two-thirds as wide as the prothorax, the vertex transversely rather convex; punctures fine, not very dense; clypeal lobes rounded, moderately reflexed, the sinus moderately deep; prothorax small, nearly as long as wide in the male, somewhat as in *affinis* in form and sculpture, the erect hairs fine and rather inconspicuous, the latero-basal fringe long and composed of much coarser hairs, like those of the scutellum, the margins of which are finely smooth; median line broadly, feebly impressed; elytra fully as long as wide, feebly inflated behind the base, two-fifths wider than the prothorax; striæ of the double sets very fine, well separated, all the intervals in inner half subequally and distinctly convex, finely and very remotely punctate, with short inconspicuous pubescence, without tomentum, except the dash behind the scutellum; flanks with two small transverse spots of tomentum, the convex marginal bead black; pygidium (♂) as long as wide, convex, moderately pubescent, with the sides tomentose, the crenulated transverse lines

close-set; hind tarsi (♂) barely twice as long as the tibiæ. Length (♂) 7.25 mm.; width 3.6 mm. New York.....**parvulus** n. sp.

11—Punctuation of the elytra in great part strong and dense, but with the less punctate intervals not at all costuliform, flat, the flanks without trace of transverse tomentose spots and the pygidium with coarse and conspicuous, though not very long, ashy hairs. Body pale metallic-green in color, the eltyra evenly testaceous, with thin green superficial lustre; abdomen not paler, the legs green; head and pronotum with dense, the elytra with rather less dense and shorter, erect cinereous hairs; clypeal lobes gradually rather strongly reflexed, the sinus deep; prothorax slightly elongate (♂), or somewhat transverse and more parallel (♀), the sides oblique at apex as usual, the punctures rather small but deep and very close-set throughout; cretaceous spots wholly wanting; scutellum elongate, with rather wide smooth margins, the hairs arising from the dense punctures very coarse as usual; elytra but slightly shorter than wide, widest but not at all abruptly inflated near basal third; pygidium similar in shape and convexity in the sexes, with very close-set, deep and sharply crenulate lines and coarse pubescence, that of the female peculiar in having a large rounded subapical concavity, which is more densely and coarsely pubescent than the rest of the surface, the apex rounded, only broadly and feebly sinuate at the sides. Male larger and stouter than the female as a rule, the anterior tibiæ slender, with the two teeth small and approximate, the hind tarsi twice as long as the tibiæ. Female with the antennal club shorter, the anterior tibiæ shorter and wider, with the two teeth much longer, very acute and relatively less approximate, the hind tarsi only slightly more slender, two-thirds longer than the tibiæ. Length (♂ ♀) 10.8–12.0 mm.; width 5.2–6.3 mm. Pennsylvania to North Carolina. Fifteen examples. [*Trichius bibens* Fabr.; *bidens* Oliv.].....**bibens** Fabr.

Punctuation of the elytra sparse, sometimes slightly closer on the alternate intervals, the costulation similarly obsolete or very feeble; flanks with two tomentose spots; pygidium (♀) with an abruptly produced subtruncate lobe at apex, the surface flattened apically but not impressed and, throughout, with the transverse wavy crenulate incised lines widely separated, the surface glabrous or nearly so in both sexes.....12

12—Body deep and brilliant metallic green in color throughout, rather stout, very shining, the elytra, as in *bibens*, without trace of the opaque lateral areas of the *piger* section; pubescence of the upper surface moderately long, not very conspicuous, longer and coarser on the scutellum and neighboring parts of the elytra; head and prothorax with small and deep but only moderately close-set punctures, evenly disposed almost throughout, without trace of tomentose spots, the head with a broad V-shaped punctureless callus on the vertex, the clypeus nearly flat, the lobes gradually and very feebly inclining upward, rounded, the sinus very moderate; prothorax rather large, nearly as long as wide (♂), slightly transverse (♀), the sides more converging from the base in the former, oblique at apex; median line feebly and indefinitely impressed; scutellum with the

smooth margin very narrow; elytra distinctly shorter than wide, with two sets of double incised striæ, the punctuation very irregular; flanks punctured and subrugulose, having two very small spots of tomentum; pygidium (♂) about as long as wide, rather strongly convex, subumbonate near the apex, or (♀) distinctly broader, almost as convex though flat apically, having in both sexes a slender lateral spot of white tomentum, the spots never tending to extend inward across the base; anterior tibiæ differing sexually as in *bibens*, the hind tarsi twice as long as the tibiæ (♂), one-half longer than the tibiæ (♀); abdomen with a long transverse tomentose spot at each side of the fifth segment, shorter in the female. Length (♂ ♀) 9.0–10.7 mm.; width 4.6–5.7 mm. Louisiana and Texas. [*Trichius viridulus* Fabr.; *virens* Linn.] ..... **viridulus** Fabr.

A—Nearly similar to *viridulus* in general form, sculpture and coloration but not quite so stout and with the elytra testaceous, with feeble green lustre, darker green at the humeri and external apical angles, the head nearly similar but the clypeus is feebly reflexed laterally and the callus of the vertex is not so well defined, the punctures in that region merely somewhat sparser; prothorax similar in form in the sexes and distinctly wider than long, with tomentum near the hind angles in the female; elytra almost similar in outline but with the punctures everywhere sparser and with the posterior of the two lateral tomentose lines much longer, penetrating a third to half way across the elytron; pygidium similarly convex and sexually modified, but only very little wider in the female and, in both sexes, with the larger lateral tomentose areas arching inward at base, becoming only very narrowly separated at the middle of the base, the crenulate incised lines finer and still much more remote than in *viridulus* and more or less disintegrated, especially in the female. Length (♂ ♀) 9.5–10.5 mm.; width 5.2–5.5 mm. Florida (Marion Co.). [*Trichius semiviridis* Csy.] Two examples ..... **semiviridis** Csy.

B—Similar in outline and general features of sculpture to *semiviridis* but black throughout, with deep violaceous lustre, the elytra pale red-brown, shining, but without trace of metallic lustre of any kind; pubescence only moderate in length or density, not conspicuous, the pygidium very shining and subglabrous, with the sparse hairs very minute and decumbent; head well developed and throughout nearly as in *viridulus* in form and sculpture; prothorax (♂) rather large, not quite as long as wide, the sides slightly converging from the base, oblique apically; scutellum with scarcely any smooth margin; elytra formed as in the preceding, with fine, sparse and inconspicuous punctures, which, on the flanks however, are rather coarse and close-set, giving a rugose aspect, differing considerably from the small sparse punctures of the smoother flanks in *semiviridis*, the flanks (♂) without tomentose spots; pygidium (♂) as long as wide, convex, subumbonate apically, the transverse incised zigzag lines well separated, the line of white tomentum at each side long, rather narrow, not extending inward at base in the type; hind tarsi very long, more than twice as long as the

tibiæ; lateral tomentose line of the fifth segment much shorter than in the male of *viridulus*. Female nearly like the male, except that the head is smaller and the hind tarsi much shorter and evidently more slender; the elytra, also, have two slender transverse lines of tomentum on the flanks, the anterior very short, and the lateral areas of pygidial tomentum extend across the base. Length (♂♀) 9.5–10.8 mm.; width 5.3–5.4 mm. Alabama (Mobile),—Loding, and Florida. Two examples.

rasilicauda n. subsp.

C—Nearly similar to *rasilicauda* in general appearance, coloration and lustre throughout, except that the outline is more slender and the abdomen red, the last segment more obscure; pygidium similarly black, with violaceous lustre but with the crenulate lines finer and feebler, well separated; head and prothorax similar but less stout; elytra as in the male of *rasilicauda* but with the punctures less coarse and not so rugose at the sides and with small remnants of the usual two transverse tomentose lines on the flanks; legs and tarsi nearly similar. Length (♂) 9.3 mm.; width 4.8 mm. North Carolina (Southern Pines),—Manee.

rufiventris n. subsp.

Body shorter, more abruptly ventricose, shining, deep and very uniform blackish-blue in color throughout, the vestiture rather sparse and inconspicuous, cinereous; head nearly as in *viridulus* in form and sculpture; prothorax distinctly shorter, a fifth wider than long in the male, otherwise nearly as in *viridulus*, except that the punctures are rather stronger and that there is no evident impression of any kind along the median line; scutellum with very fine pubescence and smooth margins; elytra as in *viridulus* in form, sculpture and in having two very small tomentose spots on the flanks, but they are decidedly broader when compared with the prothorax; pygidium as in *viridulus* in form, sculpture and size and disposition of the lateral lines of tomentum, which have no tendency to spread across the base, the tomentum of the fifth ventral also similar; under surface with the long dense pubescence finer and whiter; hind tarsi more than twice as long as the tibiæ. Length (♂) 9.0 mm.; width 4.5 mm. North Carolina (Southern Pines),—Manee. [*Trichius lunulatus* Fabr., and *carolinensis* Csy.] The dash of tomentum behind the scutellum is much more developed than in any of the preceding forms except *semiviridis*. . . . . **lunulatus** Fabr.

The synonymy of this genus has been confused to a great degree, ever since Burmeister placed all of the North American species, excepting *piger*, under the specific name *bibens*. I am confident that both *assimilis* and *viridans*, of Kirby, are species distinct from *affinis*, as can be realized readily on viewing side by side the very large series at hand. *Assimilis* does not occur on the Atlantic coast but is the most abundant form of the genus in the Lake regions; its larger size, stouter form and very long transverse

white fasciæ at the sides of the elytra, cause its distinctness in a large series to stand out in bold relief. I also think that *lunulatus* is sufficiently distinct from *viridulus* to be regarded as a species and not of lower degree. Schaum rather complicated the subject further by describing *mutabilis* and *variabilis*, which names very well express his ideas of the species, for he has thrown into them so many discordant elements that the names are entirely ambiguous. Granting that he intended typical *variabilis* to be his "variety a," the name must attach permanently to that form, which the Munich catalogue records as a synonym of *affinis*. As to *mutabilis* it also included modifications of several distinct taxonomic forms, and I here regard the name as a synonym of *viridans* Kirby, a species allied to *affinis*, with which a part of *mutabilis* is united in the Munich catalogue, and, as the remainder of *mutabilis* comes under *viridulus* in that list, the synonymy here proposed seems to be all the more likely, *viridans* being thought allied to *viridulus* by both Burmeister and Schaum, whereas it is really allied to *affinis*, as shown by the synonymy published by Horn (Trans. Am. Ent. Soc., 1876, p. 197), which is, however, probably taken from the Munich catalogue, where *viridans* appears as a variety of *affinis*.

Valgus Scriba.

This genus is entirely isolated from any other of the Trichiini by the remotely separated hind coxæ, quinquedentate anterior tibiæ and greatly elongated basal joint of the hind tarsi. In fact, it stands alone among the Cetoniids and is I think as much entitled to tribal distinction as *Cremastocheilus* and allied genera. The body is very small in size, peculiarly depressed on the discal parts of the elytra, with a prominent, deeply canaliculate median pronotal ridge in most of the species; the erect hairs of the other Cetoniids are replaced by large, rounded and more or less decumbent scales. *Valgus*-like forms occur over a large part of the globe, particularly in the tropics and they have very recently been divided into a considerable number of genera; our species, however, all belong to *Valgus* of the *hemipterus* type, excepting *squamiger*, which differs radically in sexual characters and also in the proportional abundance of the sexes, although it seems to be normal in general form and vestiture; they are few in number and may be known as follows:

Female without a pygidial stylus. Body oblong-suboval, rather stout, obscure ferruginous, with the elytra clearer rufous and with the large yellowish scales abundant, covering most of the surface (♂), or blackish, with the elytral scales small, blackish, sparser and more lineiform, except in a central cluster of pale scales on each (♀); head small, with very minute stiff hairs, the clypeus large, flat, transversely oval, very feebly sinuate medially at apex; antennal club small in both sexes; eyes very moderate; prothorax as long as wide to very slightly wider, the sides converging from base to apex, feebly, subevenly arcuate and unevenly serrato-crenulate, feebly reflexed anteriorly; surface very uneven, the sides of the median sulcus becoming prominently elevated and cariniform anteriorly, the portion between the carinæ and the sides feebly, unevenly concave, the entire surface with coarse shallow punctures bearing each a very large yellowish scale (♂), or a narrower squamiform hair (♀); scutellum small, narrow and elongate, flat and finely, densely squamulose; elytra evidently shorter than wide, nearly one-half longer than the prothorax (♂), or a third (♀), about two-fifths wider, the sides feebly arcuate, just visibly converging from base to the broadly rounded apical angles, the humeri not in the least prominent, the slight callus continued obliquely as a broad feeble ridge to the apex, the surface within the ridge somewhat concave, finely, irregularly striate and with moderate close-set shallow punctures. Male with the pygidium very convex, large, twice as wide as long, closely covered with large yellowish scales, the hind tarsi three-fourths longer than the tibiæ, the basal joint not as long as the following three. Female with the pygidium shorter and less convex, about three times as wide as long, the upper margin not evenly arcuate as in the male but less arcuate, becoming slightly sinuate medially, the similar very close-set shallow areolæ having a mixture of large scales and blacker scale-like hairs; hind tarsi thicker, shorter, two-fifths longer than the tibiæ, with the basal joint more expanded at tip and as long as the next three combined. Propygidium with the same sculpture and vestiture as the pygidium in each sex. Length (9 ♂, 18 ♀) 5.5–6.6 mm.; width 3.0–3.5 mm. New York to North Carolina and westward to Iowa. Abundant. [*V. seticollis* Beauv.]

squamiger Beauv.

Female with the apex of the pygidium prolonged obliquely in a long, straight, gradually tapering acuminate process, the upper side of which is feebly canaliculate, the edges of the groove strongly, irregularly serrate in the European *hemipterus*, but smooth in the American species, so far as observed; body nearly similar to the preceding in general appearance. (*Acanthurus* Kirby).....2

2—Size very small, the pronotal impression deep and well defined by parallel carinæ anteriorly; sides serrulate, more strongly in front..3

Size large, the anterior pronotal impression feeble; sides not serrulate..4

3—Form oblong-ventricose, rufo-piceous or in part blackish; head rather more than half as wide as the prothorax, more or less sparsely and unevenly squamulose, the large flat clypeus distinctly sinuate medially at apex, the sinus broader than the lobes; antennæ very small;

prothorax only three-fourths as wide as the elytra, subquadrate, with feebly converging, strongly serrate sides, more elongate and with rather more converging sides in the female, the surface with close rounded annuli, bearing very coarse pale scales, darker and more lineate medially, the canaliculation broad, deeply concave anteriorly, where it is bordered by high sharp carinæ, evanescent posteriorly, the disk with a posteriorly oblique impression at each side medially; elytra a fourth shorter than wide, parallel, with feebly arcuate sides and a sublateral obtuse ridge as in the preceding, the disk broadly flattened, feebly concave near the ridges, with numerous fine unimpressed double striæ, the punctures close, bearing suberect black scales, becoming pale at base, apex and in an imperfect median fascia; pygidium only feebly convex, subtriangular, subsimilar in outline in the sexes, with large scattered pale and some blackish scales, the apical stylet of the female acuminate and as long as the median line of the pygidium; abdomen very densely, at the sides sparsely, the legs less densely, covered with large pale scales; hind tarsi (♂) three-fourths longer than the tibiæ, or (♀) scarcely one-half longer. Length (12 ♂, 1 ♀) 4.0–5.0 mm.; width 2.3–2.8 mm. Pennsylvania, North Carolina, Kentucky and Indiana. [*Trichius canaliculatus* Fabr. and *variegatus* Beauv.]. . . . **canaliculatus** Fabr.

Form distinctly narrower, the size still smaller, the body more depressed, that is: thinner in a vertical sense; color pale red-brown, rather shining; head smaller, not half as wide as the prothorax, the clypeal sinus still broader; prothorax three-fourths as wide as the elytra, the sides moderately converging from base to apex and subevenly, rather strongly arcuate, finely, sharply serrulate; surface with small and shallow, distinctly separated punctures, the anterior broad groove with acute and moderately elevated sides, obsolete basally; near each side, at about the middle, there is a large rounded fovea; pale scales suberect and large laterally, more slender medially, especially in the female; elytra much abbreviated, parallel, with broadly rounded external apical angles, the sublateral ridge much less evident than in the preceding, the disk flat, with small shallow close-set annuli, the fine feeble double striæ very uneven; scales and hairs suberect, bristling in single series along the striæ, less narrow and more squamiform at base, in a very imperfect transverse median line and along the apex, but nowhere so broad and conspicuous as in *canaliculatus;* pygidium nearly as in the latter, rather convex and with some slender scattered scales in the male, flatter, rather smaller, with similar small annuli but with only a few very short squamiform hairs in the female, the apical stylet of the latter a little shorter than the median line of the pygidium and relatively broader basally than in the preceding species; tibiæ broader, the hind tarsi not quite so long and thicker. Length (2 ♂, 1 ♀) 3.7–4.4 mm.; width 2.0–2.35 mm. Louisiana (Vowell's Mill),—Leng. . . . . **minutus** Csy.

4—Female piceous-black, only feebly shining, the last two dorsal segments of the abdomen more shining and rather densely punctured, the unique type almost entirely deprived of vestiture, the few remaining scaly hairs black; head coarsely punctured, the vertex

moderately concave; prothorax longer than broad, coarsely but sparsely punctate, with a broad, very faint and shallow impression on the median line near the apex and a rather deep impression near the middle of the lateral margin, so that the sides appear to be slightly emarginate when viewed from above; disk of the elytra flat, with moderately deep striæ and convex intervals, irregularly disposed; pygidium oblique, moderately convex, styliferous at apex, the process short, flattened and rounded at tip; under surface rather shining and coarsely punctured. Length 9 mm. California (Fort Crook).

californicus Horn

The large size and some other features of *californicus*, suggest that it may come under some one of the numerous genera recently erected at the expense of the old heterogeneous *Valgus*. I have heard nothing concerning a rediscovery of this interesting species and assume that it has never been found since the original type was taken from a spider's web by the describer. *Squamiger* and *canaliculatus* are abundant, but of *minutus* I only have three examples, so that I cannot say positively that the male is always relatively so much more abundant than the female in the *canaliculatus* type as might be inferred from the numbers stated above; in *squamiger* the males and females seem to be almost equally numerous in individuals.

In *Valgus* I can perceive no trace of suture between the propygidium and fifth ventral segment, and the last spiracle is very small, somewhat tumidulous and at apical third; the other spiracles, covered by the elytra, are extremely small.